POLYCHAETA ERRANTIA OF THE SIBOGA EXPEDITION

PART II

APHRODITIDAE AND CHRYSOPETALIDAE

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POLYCHAETA ERRANTIA OF THE SIBOGA EXPEDITION

BY

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Leyden

PART II

APHRODITIDAE AND CHRYSOPETALIDAE

With 19 plates and 5 textfigures

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PART II

Family APHRODITIDAE.

The collection of *Aphroditidae*, brought home by the Siboga Expedition, is a very rich one, for all the sub-families are represented in it; it must have been no easy task to pick up these animals, several of which are very small and oozy, from the mud in which they are living.

Of the sub-family *Hermioninae* hitherto only two species were met with in the Netherlands' East-Indies viz. *Aphrodite sondaica*, mentioned by GRUBE from North Borneo and a species of *Hermione* (? *hystrix* Sav.) collected by SEMON in the neighbourhood of Amboina, by KÜKENTHAL in the sea of Ternate. The species of *Aphrodite* has not been refound by the Siboga Expedition, however she made a rich harvest of 23 species, belonging to the genera *Aphroditella* (*A. malayana*, *A. limosa*, *A. sibogae*, *A. decipiens*, *A. mongolica*, *A. floresiana*), *Hermione* (*H. moluccana*, *H. parva*, ? *H. malleata* Gr.), *Laetmonice* (*L. producta* Gr. var. *L. malayana*, *L. rugosa*, *L. dubiosa*, *L. breve-pinnata*, *L. batheia*, *L. viridescens*, *L. aphroditoides* Mc Int.), *Pontogenia* (*P. nuda*, *P. spinosa*), *Aphrogenia* (*A. villosa*, *A. nigro-punctata*) and to a new genus *Halogenia* (*H. arenifera*, *H. conchifera*).

Our knowledge of the distribution of the *Iphioninae* increased very much, for *Iphione muricata*, hitherto only mentioned from Amboina, was collected by the Siboga Expedition at 25 stations, especially on coral-reefs; of the rare *Iphionella cimex*, only known from two localities, viz. Malacca Strait and Sulu Sea, one specimen was dredged in the last-named Sea at a depth of 1270 m. and the other one south off the isle of Rotti, at a depth of 520 m.

As to the sub-family of the *Polynoïnae*, hitherto only six representatives of this group were mentioned from Amboina, Borneo, Ceram and Ternate viz. *Lepidonotus carinulatus* Gr., *L. wahlbergi* Kinb., *Polynoë cornuta* Fischli, *P. gymnonotus* Mrz., *P. cristatus* Gr., (*Polynoë tumorifera* Gr.) and *Scalisetosus ceramensis* Mc Int.; of those two species *Lepidon. wahlbergi* Kbg. collected by BEDOT near Amboina and *L. (Polynoë) gymnonotus* Mrz. met with by KÜKENTHAL near Ternate, have not been refound by the Siboga Expedition. However she had the good luck to collect 63 species and varieties of Polynoïnae, of which 21 species are new to science,

viz.: *Lepidonotus albo-pustulatus*, *L. javanicus*, *L. malayanus*, *L. ruber*, *L. suluensis*, *Allmaniella arafurensis*, *Halosydna batheia*, *H. pilosa*, *Parahalosydna sibogae*, *Lepidasthenia affinis*, *L. sibogae*, *Weberia pustulata*, *Harmothoë atra*, *H. nigricans*, *Lagisca elytrophora*, *L. malayana*, *Scalisetosus papilliferus*, *S. tentaculatus*, *Polynoë kampeni*, *P. nigro-punctata*, *P. versluysi*; 12 species belonging to the genera *Lepidonotus*, *Allmaniella*, *Lepidasthenia*, *Harmothoë*, *Lagisca*, *Scalisetosus* and *Polynoë*, were too incomplete for a satisfactory recognition.

However it was often no easy task to decide, to what genus some species does belong, for every one, who has been occupied with the study of this group, will agree with JOHNSTON's assertion, that "the classification of the Polynoids is in a most unsatisfactory state, and much in need of thorough revision. The great multiplication of genera, nearly all of them founded upon variable, non-essential, or even accidental characters, and none of them clearly and fully defined, has been a serious drawback to the study of these interesting forms"[1]). Also DARBOUX in his elaborate paper "Recherches sur les Aphroditiens"[2]) has not succeeded in giving a clear definition of the different genera and it is not unusual to see the same species ranged by different authors in six different genera. Though I fully agree with AUGENER[3]) about the desirability to cancel some of the old genera f. i. *Eucrante*, *Eunoa*, *Eupolynoë*, *Evarne*, *Laenilla*, *Nychia* and *Parmenis* and to unite them with the genus *Harmothoë*, I feel justified to propose three new ones viz.: *Paralepidonotus*, *Parahalosydna* and *Weberia*; I cannot follow JOHNSTON's example to cancel nearly all the genera and I prefer in accordance with GRUBE (and EHLERS) to maintain two large groups:

I. *Lepidonotidae*: the lateral frontal lobes of the prostomium prolonged to form the basal joint of the paired antennae.
II. *Harmothoïdae*: the lateral frontal lobes of the prostomium produced into two acuminate or rounded peaks, beneath which the paired antennae arise.

Though the greater part of Polynoïnae are inhabitants of shallow water, some of them were dredged at a great depth f. i. *Lepidonotus malayanus* at a depth of 469 and 560 m., *Allmaniella arafurensis* of 560 m., *Halosydna batheia* of 959 m., *Weberia pustulata* of 794 m., *Harmothoë benthaliana* of 520 m. and *Admetella longipedata* of 538 m.; however pelagic forms have not been met with, though *Drieschia pelagica* Mich. was collected by DRIESCH in the neighbourhood of the isle of Ceylon[4]).

The sub-family of *Eulepidinae*, as far as I know, hitherto was not met with in Malayan waters; a new species *Eulepis malayana* was dredged in two localities.

Of the sub-family of *Sigalioninae* only two species were recorded from the Malay Archipelago viz. *Sigalion amboinensis* Gr., an incomplete specimen of which was collected by the "Gazelle" in the neighbourhood of Amboina, where probably it afterwards was refound by SEMON (*Sigalion* sp. Collin) and *Thalenessa gracilis* Fischli, brought home from Ternate by

1) A preliminary account of the Marine Annelids of the Pacific coast etc.
2) Bull. scient. de la France et de la Belgique Vol. XXXIII, 1900.
3) Polychaeten von Franz-Joseph-land, Zoolog. Anzeiger, Bd. XLI, 1913, p. 202.
4) MICHAELSEN, Polychaeten von Ceylon, 1892, p. 6, figs. 15–18; Jahrbuch Hamburg-Wissensch.-Anstalt. IX, 2.

KÜKENTHAL. However the Siboga Expedition collected representants of this group at no less as thirty seven stations. Among them there are three species of *Psammolyce*, a genus hitherto not mentioned from the Malayan seas, with a new species *Ps. malayana*. Of the genus *Leanira*, also hitherto unknown in this region, specimens were collected at twenty stations, and six new species described, viz. *Leanira coeca*, *L. javanica*, *L. melanocephala*, *L. sibogae*, *L. tentaculata* and *L. vulturis*. The genus *Sthenelais* is represented in the Siboga collection by five species, among which there are three new ones, viz. *Sthenelais dubiosa*, *S. heterochela* and *S. malayana*. Of the genus *Sigalion*, which seems to be very rare in the Indo-pacific Ocean, in the neighbourhood of Banda a new species *Sig. bandaensis* was dredged and also in the vicinity of the Talaut Islands an incomplete specimen was collected; however *Sig. amboinensis*, mentioned before, was not refound. Of *Euthalenessa oculata* (Mc Int.) specimens were collected at 5 stations, whereas at a station in Madura Strait a worm was dredged, that proved to be the representant of a new genus *Euleanira*, intermediate between *Leanira* and *Psammolyce*.

The sub-family of *Acoëtinae* is represented by the giant *Eupolyodontes amboinensis*, at first described from Amboina by MALAQUIN and DEHORNE, and by three other species viz. *Eupanthalis nigro-maculata*, mentioned by GRUBE from the Philippines and *Polyodontes atromarginata* and *P. sibogae*, both new to science.

Sub-family Hermioninae.

Body short, oval and depressed. The dorsal setae directed upwards and backwards, so as to protect the elytra. Point of attachment of the elytra situated laterally. A dorsal felt often present. Prostomium only provided with a median antenna (tentacle), beneath which a papillose facial tubercle is situated. Usually two pairs of eyes. Bipinnate setae in the neuropodium of the anterior segments. Jaws represented merely by thickened prominences.

Genus **Aphroditella** Roule.

Roule, Expéditions scientifiques du "Travailleur et du Talisman", Annélides et Géphyriens, 1906, p. 15.

Resembling *Aphrodite*; ventral bristles however not smooth, but pilose or pinnate.

Mc Intosh [1]) in 1885 first described a minute Aphroditean-worm from the West-Indian abyss, the ventral bristles of which are "densely pilose almost to the terminal hook and provided with a spur as in *Laetmatonice*" *(Aphrod. intermedia)*; two years thereafter Ehlers [2]) among the Annelids of the Blake, from a depth of 1719 m., met with an Aphrodite, that possesses ventral bristles, provided on one side with a beard of hairs (*Aprod. obtecta*). Finally Roule among the Annelids of the Travailleur and the Talisman found an Aphrodite from a depth of 1084 m., that also possesses ventral setae with a pinnate appearance; with the two preceding species he ranges this form in a new genus *Aphroditella*. Several species of this genus appear to be represented in the Malayan abyss.

1. *Aphroditella malayana* Horst. Pl. XI, figs. 1—3.

Horst, Zoolog. Mededeel. R. Museum Nat. Historie, Leiden, vol. II, 1916, p. 65.

Stat. 161. 1°10'.5 Lat. S., 130°9' Long. E. East off Kofiau Island. Depth 798 M. 2 specimens.

The largest specimen measures 37 mm. in length and 25 mm. in breadth; the number of segments amounts to 38.

The body is oval, distinctly narrowed in the posterior region like in *Aphrodite australis*

1) Challenger Annelida Polychaeta, p. 38, Pl. I, fig. 6, Pl. VI *A*, fig. 1.
2) Florida-Anneliden, p. 42, Pl. VI, figs. 1—8.

(Challenger Annel. Pl. VII, fig. 7). The long golden-brown dorsal bristles pierce the grey dorsal felt as in *Aphrodite aculeata*, but the iridescent lateral bristles of this species are absent; the dorsal bristles are directed backward, but they do not quite reach to the median dorsal line. In the posterior half of the ventral side (Pl. XI, fig. 2) the intersegmental grooves have a sinuous course, as also appears to occur in *Aphroditella obtecta* (Florida-Anneliden, Pl. VI, fig. 2). The ventral bristles are shorter than the dorsal ones; their distal part is faintly S-like curved and densely pilose over a short region at some distance from the hook, much resembling the ventral bristles of the Florida-species (Pl. XI, fig. 3). They are arranged in three groups of different length: two dorsal ones that are the longest; a median group of three, that measure three-quart of the length of the dorsal ones and an inferior group of four, that are shorter than the median ones. The ventral cirrus, tapering distally, extends beyond the extremity of the neuropodium. The head is rounded, nearly as long as broad. Two black eyes are situated on the lateral side of the anterior part of the head and therefore have a position quite different from that in the other species; the anterior of them are the largest (Pl. XI, fig. 1). The facial tubercle is large, pear-shaped, tuberculate. The tentacle is slender, cylindrical, nearly as long as the head. The palps are not very long; bent backward they extend to the sixth segment. Of the tentacular cirri the dorsal one measures two thirds of the length of the palps; the ventral one is a third shorter than the dorsal one.

2. *Aphroditella limosa* Horst. Pl. XI, figs. 4—7.

HORST, Zool. Mededeel. R. Museum Nat. Historie, Leiden, vol. II, 1916, p. 68.

Stat. 178. 2°40′ Lat. S., 128°37′.5 Long. E. North off Ceram. Depth 835 M. 1 specimen.

The body is oval, long 27 mm., broad 18 mm.; it consists of about 30 segments.

The whole dorsum is covered with mud, containing foraminifera-shells, annelid-tubes etc., hiding all the parts of the animal except the ventral bristles and the palps. The ventral side, attenuated posteriorly, is densely covered with small papillae. The ventral bristles (Pl. XI, figs 5 and 6) have their distal part faintly S-like curved, terminating in an acute tip and provided along the underside with a villous beard; as usually they are arranged in three rows. The dorsal bristles are represented by a fascicle of fine, smooth, faintly curved setae, that lie totally embedded in the dorsal felt and terminate in a vitreous, hook-shaped tip, directed towards the median dorsal line (Pl. XI, fig. 7). The ventral cirrus is nearly as long as the neuropodium, with an oval dilated tip. The head (Pl. XI, fig. 4) is oval with its broadest part directed anteriorly; it possesses two rather large, globular eye-peduncles, without pigment. The tentacle is short and very slender, not quite as long as the head; a narrow, keel-shaped, facial tubercle, covered with papillae and somewhat longer than the head, lies enclosed between the base of the palps. The palps are rather long, slender and tapering distally, beset with spinous papillae. Of the tentacular cirri the dorsal one measures two thirds of the length of the palps; the ventral one is shorter. This specimen could not be identified with any one of the species already described; it somewhat resembles *Aphrod. obtecta* Ehl., from the coast of Florida.

3. *Aphroditella sibogae* Horst. Pl. XI, figs. 8—10.

HORST, Zool. Mededeel. R. Museum Nat. Historie, Leiden, vol. II, 1916, p. 66.

Stat. 162. Between Loslos and Broken Islands, West off Salawatti. Depth 18 M. 1 specimen.

Length 22 mm., breadth 15 mm.

An oval form of moderate seize, entirely covered with mud, that leaves only visible the short brown ventral bristles besides the slender dorsal setae that are coated with granular matter and therefore have the appearance of fringes. The head is rounded trapezoidal (Pl. XI, fig. 8), nearly as long as broad, of a pale red tint, with two large, round, prominent areas on its anterior part, that are somewhat darker coloured and bear two small black spots (eyes?). A small tentacle, not as long as the head, arises from the middle of the frontal margin; beneath it a wedge-shaped facial tubercle is situated. The palps are rather long, tapering distally, in their terminal part reddish coloured like the head. The ventral bristles (Pl. XI, figs. 9 and 10) are not very long, straight, faintly S-like bent over a short distal part, that is coated along one side with villous appendages, that in the longer ones extend beyond the hooked tip, like in *Aphrod. intermedia* (Challenger Annelida, Pl. VI A, fig. 1); they are arranged in three rows. Coarse dorsal bristles could not be observed amidst the felt.

4. *Aphroditella decipiens* Horst. Pl. XI, figs. 11 and 12.

HORST, Zoolog. Mededeel. R. Museum Nat. Historie. Leiden, Vol. II, 1916, p. 66.

Stat. 51. Molo Strait. Depth from 69 to 91 M. 1 specimen.

Length about 10 mm., breadth 8 mm. Number of segments nearly 30.

In its external appearance, as well as by the structure of its ventral bristles this small worm so much resembles the preceding species (*Aphrod. sibogae*), that I first believed it to be identical; however a closer examination revealed some differences especially in the structure of the head, so I think it to belong to an other species.

The head is broadly oval, somewhat resembling that of *Aphrod. alta* (KINBERG, (Annulata, Pl. I, fig. 1) and bears in his anterior part on each side two small black eyes, situated close behind each other on a faintly globular area (Pl. XI, fig. 11). The tentacle is slender, filiform, somewhat longer than the head; the facial tubercle is pear-shaped, with a short stalk. The palps are not very long, rather stout in their basal part, tapering distally. The ventral bristles (Pl. XI, fig. 12) have a conspicuous hook-like tip; beneath it over a short region the bristle is densely villose and in some of them that region is continued and projects as a pilose process beyond the hook, like in *Aphrod. intermedia* (Challenger Annelida Pl. VI A, fig. 1). There are seven ventral bristles, arranged in three groups of different length.

5. *Aphroditella mongolica* Horst. Pl. XI, figs. 13—16.

HORST, Zoolog. Mededeel. R. Museum Nat. Historie. Leiden, Vol. II, 1916, p. 67.

Stat. 105. 6°8′ Lat. N., 121°19′ Long. E. North off Sulu Island. Depth 275 M. 2 specimens.

Length about 25 mm.; breadth 12 mm.

In this species some of the coarse dorsal bristles pierce the thick dorsal felt with their distal end; they are not very stout, brown-yellow, densely covered with small tubercles or spines, and terminating in an uncoloured, vitreous hook-shaped extremity (Pl. XI, fig. 16). The ventral bristles are pale-brownish coloured, faintly S-like bent in their distal part and provided with a villous beard at some distance from the end, like in *Aphrod. malayana* and *A. obtecta* (Pl. XI, figs. 14 and 15); they are arranged in rows, as usually. The head is heart-shaped, provided with a tentacle, that consists of a thick basal part, measuring about a third of the length of the head and of a slender distal joint, nearly as long as the head. In its anterior part there occur on each side a pair of semilunar eyes, situated on a prominent, elliptical area. The facial tubercle has the shape of a pine-apple and is nearly of the same length as the head. The palps are glossy, stout, not very long, tapering distally and beset with fine spinous papillae, only visible by high power.

6. *Aphroditella floresiana* Horst. Pl. XII, figs. 1—5.

HORST, Zoolog. Mededeel. R. Museum Nat. Historie. Leiden, Vol. II, 1916, p. 67.

Stat. 51. Molo Strait. Depth from 69 to 91 M. 3 specimens.
Stat. 153. 0° 3'.8 Lat. N., 130° 24'.3 Long. E. North off Waigeu Island. Depth 141 M. 1 specimen.

At Stat. 51 an adult and two young specimens were caught. The last ones measure only 9 and 6 mm. in length, whereas the adult has a length of 27 mm.; its breadth in the middle of the body is 14 mm.

The specimen of Stat. 153 is 8 mm. long. (without bristles) and the body in its anterior and posterior region is acuminated; the number of segments is about 30. The dorsum is coated with a thick felt, through which the dorsal bristles penetrate; however they are not prominent, but with their *strongly curved* or knee-like bent distal end lie down on the back in transverse rows. Their distal half is pale coloured, densely covered with minute tubercles, and terminates in a short hook (Pl. XII, figs. 2 and 3). The ventral bristles are nearly straight, beset over one side of the short distal region with villous appendages (Pl. XII, figs 4*a* and *b*); in some of the bristles that villous coating projects beyond the apex, as in *Aphrod. intermedia* (Challenger Annelida, pl. VI[A], fig. 1). However in the young specimens these bristles have a quite different appearance; their tip lacks the villous beard and is shaped like a pen, provided with three or four indistinct teeth (Pl. XII, figs. 5*a* and *b*). They are situated in the neuropodium as usually in three rows, two stout ones, dark brown coloured dorsally, 5 shorter bristles in a median series and 8 ones ventrally.

The head (Pl. XII, fig. 1) is heart-shaped, with a small knob-like tentacle in the middle of the anterior region as in *Aphrod. acuminata* from Florida; on each side of it there occurs a prominent area, on which two minute black spots are situated in a transverse series. The palps are rather long, with an acute extremity; they show a constriction in their basal region. The facial tubercle is oblong conical, beset with papillae.

Genus **Hermione** Blainv.

Besides by the presence of glochideal dorsal bristles, characterised by their toothed (not fringed) ventral setae.

1. *Hermione moluccana* Horst. Pl. XII, figs. 6—10.

HORST, Zool. Mededeel. R. Museum Nat. Historie, Leiden, vol. II, 1916, p. 70.

Stat. 131. Anchorage of Beo, Talaut Islands. Reef-exploration. 1 specimen.
Stat. 138. Anchorage on the east coast of Kajoa Island. Reef-exploration. 1 specimen.
Stat. 220. Anchorage off Pasir Pandjang, West coast of Binongka. Reef-exploration. 1 spec.

The largest specimen has a length of 20 mm.; its breadth (without bristles) is 9 mm., whereas the number of segment amounts to 32.

The body has an oblong-ellipsoidal shape, with the broadest segments in the median area, whereas in *H. hystrix* the segments over a large part of the body have the same breadth. All bristles are yellow, only the glochideal setae are darker coloured at their base and distal extremity; they are directed towards the median dorsal line, whereas in *H. hystrix* and *H. malleata* these setae are conspicuously brown-coloured and flanking the lateral sides of the body. The glochideal bristles (Pl. XII, figs. 7 and 8) have a long, pointed spear-head and two recurved fangs at one side and three at the opposite, the inferior of them being the largest, about twice as long as the superior ones; the distal part of their shaft is smooth, the inferior part covered with small tubercles. The short dorsal bristles (Pl. XII, fig. 9) of the elytral segments are slightly curved, covered with minute tubercles and provided with a smooth, translucent tip; they are quite differing from those in *H. hystrix*. The tip usually is surrounded by a cap of fine threads, that appear to emerge from it. The bifurcated ventral setae are provided with a small accessory tooth above the large spur (Pl. XII, fig. 10). The head is rounded, nearly as long as broad, with two large oval eye-peduncles on its frontal margin, each provided with a large black spot; between them a short tentacle arises, consisting of a conical, tuberculate basal part, a median joint nearly twice as long as the preceding and a short, clavate distal part (Pl. XII, fig. 6). The palps are rather long, tapering distally. The tentacular cirri are slender, not quite as long as the palps, like the other cirri provided with a clavate terminal joint; the ventral cirrus measures two thirds of the dorsal one.

2. ? *Hermione malleata* Grube. Pl. XII, figs. 11—13.

GRUBE, Annulata Semperiana, p. 17.
WILLEY, Polychaeta, Ceylon Pearl Oyster Report, p. 245, Pl. I, figs. 3 and 4.

Stat. 43. Anchorage off Pulu Sarassa, Postillon Islands. Depth up to 36 M. 1 specimen.
Stat. 310. 8°30′ Lat. S., 119°7′.5 Long E. Sapeh Strait. Depth 73 M. 1 specimen.

At Station 310 a *Hermione* was caught, long about 20 mm., that presumably belongs to *H. malleata* Gr.. It much resembles *H. hystrix*, not only in its external appearance, but also in the presence of stout, dark-brown glochideal setae, that are directed somewhat outward

along the sides of the body. These bristles (Pl. XII, fig. 11) have three recurved fangs on each side beneath the spear-head, that are not quite opposite to each other. However the short dorsal bristles differ much in shape from those in *H. hystrix*; their distal half is slender, smooth, terminating in a faintly curved tip (Pl. XII, fig. 12). WILLEY describes them as a flabellum of curved, smooth-tipped setae radiating dorsad, but it is to regret, that he gives no figure of them. The bifurcated ventral setae (Pl. XII, fig. 13) are provided with a small accessory tooth. The head possesses a long and slender tentacle, nearly equalling in length the dorsal tentacular cirrus and provided with a short, clavate terminal joint. (In this regard the Siboga-specimen differs from GRUBE's *H. malleata*, for he describes and figures the tentacle as rather short, twice as long as the head and shorter than the ventral tentacular cirrus). On each side of the tentacle there is an eye-peduncle, not very large, with distinct eye-spots. The palps are long and very slender in their distal part; they are densely beset with spinous papillae.

At Stat. 43 a small *Hermione* (long 10 mm.) was caught, that agrees with the preceding one in the appearance of the short dorsal bristles, however the glochideal setae are yellow, with dark-coloured basal and distal end. Perhaps it is a young one. The place of attachment of its elytra is iridescent.

3. *Hermione parva* Horst. Pl. XII, figs. 14—16.

HORST, Zool. Mededeel. R. Museum Nat. Historie, Leiden, vol. II, 1916, p. 70.

Stat. 60. Haingsisi, Samau Island. Depth 23 M. 1 specimen.
Stat. 65a. North off Tanah Djampeah. Depth from 400 M. 1 specimen.

At the Station 65a a small *Hermione* was caught, with the proboscis everted.

It measures about 15 mm. in length. All the bristles are pale-yellow, the glochideal ones somewhat darker in their distal part; they are directed towards the median dorsal line and arch over the elytra (Pl. XII, fig. 14). Their shaft is covered with minute tubercles and the tip bears on one side two and on the other side three recurved fangs beneath the spear-head. In a specimen from Haingsisi (long 18 mm.) the dorsal bristles are pale-brown coloured. The short dorsal bristles (Pl. XII, fig. 15) of the elytral segments are nearly straight, also beset with small tubercles and terminate in an acute tip, somewhat resembling a pen. The bifurcate ventral setae (Pl. XII, figs. 16*a* and *b*) are usually provided with an accessory tooth. The head is roundish oval, with a tentacle consisting of a stout conical, tuberculated, basal part, a slender median joint twice as long as the head, dilated distally and a short clavate terminal part. There are two large eye-peduncles, each provided with a large ventral and a smaller dorsal pigment-spot. The palps are rather long, smooth, tapering distally and measure about two thirds of the length of the proboscis. The tentacular cirri are long and slender, like the other cirri also provided with a clavate terminal joint; the ventral ones measure two thirds of the length of the dorsal ones.

Genus **Laetmonice** Kinberg [1]).

Distinguished from *Hermione* especially by the presence of a fringe of hairs at the distal end of the ventral bristles.

1. *Laetmonice producta* Grube, var. Pl. XIII, figs. 1—3.

GRUBE, Anneliden Ausbeute von S. M. S. Gazelle, p. 512.
IZUKA, Errantiate Polychaeta of Japan.

Stat. 45. 7° 24′ Lat. S., 118° 15′.2 Long. E. Depth of 794 M. 3 specimens.
Stat. 314. 7° 36′ Lat. S., 117° 30.8 Long. E. Depth of 694 M. 1 specimen.

In the neighbourhood of the Paternoster Islands, at a rather great depth, four specimens of this huge, nice worm have been collected. The shape of their body (Pl. XIII, fig. 1) is oblong fusiform, not much narrowing anteriorly and posteriorly; it measures from 85 to 90 mm. in length, whereas the number of segments amounts to 48 or 49. The ventral surface is bluish grey, sparingly beset with small papillae; however in two specimens it is covered by a brownish coat, probably due to the presence of algae. Of the "many brownish cuticular warts", mentioned by Mc INTOSH, nothing could be seen. The area behind the mouth, as usually, is longitudinally grooved. The dorsum is entirely covered by 20 pairs of opalescing, imbricated elytra, arranged in the ordinary manner on the segments 2, 4, 5, 7 .... 23, 25, 28, 31, 34, 37, 40, 43 and 46; the last pair of them has their median border somewhat concave, leaving thus between them an oval opening above the anus, that is situated dorsally and surrounded by a folded wall. No dorsal felt exists.

The cephalic lobe is oblong, with globular ocular peduncles, without eyes. The palps, bent backward over the ventral side, extend to the 10th or 11th segment.

The median antenna, with a short basal part and a clavate distal extremity, separated from the main axis by a constriction, measures about a third of the length of the palps. Of the multi-lobate process, behind the ocular peduncles, mentioned by Mc INTOSH, no trace was visible. The tentacular cirri are not quite as long as the median antenna, both nearly of the same length; the ventral somewhat slenderer than the dorsal one. With regard to the cirri and bristles the feet of our specimens show some differences from those of *L. producta*, according to the description of Mc INTOSH. The bristles of the notopodium of the 2^{d} foot are all smooth, slender, slightly bent and setae with chitinous nodules on their shaft, as figured in the Challenger report (Pl. IV^{A}, fig. 2), have not been observed; in the neuropodium the upper division shows two of the powerful serrated bristles, figured by Mc INTOSH (Pl. IV^{A}, fig. 3). In the 4th foot the notopodium contains a fan-shaped fascicle of stout bristles, that are faintly bent and over their whole length beset with small nodules, especially near the tip; one of these bristles shows already some fangs at its distal extremity (Pl. XIII, fig. 3). Its neuropodium possesses some pinnate bristles as in the preceding feet, but in those, situated more backward, they are wanting. In the next segment (the 5th) all spines have

1) Ofversigt Kongl. Vet. Akad. Forhandl. 1855, p. 382.

fangs at their tip, whereas in the typical *L. producta* even the spines of the 7th segment are not barbed. In the median body region according to Mc Intosh the median spines appear to have simple extremities, that are minutely nodulated; however in our specimens these median bristles are also provided with fangs and their tips are not simple, but furnished with three points, a main spear-tip and a spine at the anterior and posterior side (Pl. XIII, fig. 2). The long golden spines of an elytron-bearing segment extend themselves backward over three succeeding elytra, therefore over seven segments, whereas Mc Intosh only speaks of the succeeding scale. The spines are preceded by a small fascicle of simple, capillary, slightly bent bristles, that are longitudinally striated. This fascicle is much larger in the cirrus-bearing segments, whereas the spines, though also glochidiate, are usually half as long as those of the elytron-bearing segments.

Though this species is principally found in the neighbourhood of the Kerguelen Islands in rather shallow water (not below 120 fath.), there were also specimens dredged in more northern regions; f. i. the variety *Wyvillei* Mc Intosh was met with by the Challenger expedition between the Antarctic and Australia in a depth of 3500 m.[1]). Afterwards Miss Buchanan[2]) recognized in the British Museum a specimen, coming from Japan and dredged at a depth of 43 fth. Also von Marenzeller[3]) had the opportunity to examine two specimens from Eno-sima (collected by Döderlein) from a depth of 300 m. and an other large specimen met with by Hilgendorf in the vicinity of Hakodate; the last-named specimen had only 18 elytra, but the glochideal spines were provided with 5 to 6 opposite fangs. In my opinion it therefore needs not excite astonishment that Miss Buchanan among the Polychaeta, dredged in the deep sea off the West coast of Ireland (500 m.), met with four specimens, nearly allied to *L. producta*; for, as already observed by Ehlers[4]) and Fauvel[5]) several species of Annelida, living in the littoral regions of the Arctic and Antarctic continent, are also met with in the depths of the Tropical Atlantic, where they find about the same temperature. The Ireland-specimens, distinguished besides by the absence of eyes, by the presence of a smaller number of segments (43 to 44) and a great deal of variation with regard to the length of the palps, are afterwards described by Mc Intosh as belonging to the variety *brittanica*. Though none of both authors mentions the exact number of the elytra, I cannot accept Marenzeller's opinion, that the specimens should belong to the sphere of varieties of *L. filicornis*. Unfortunately there reigns a good deal of controversy among Annelidologists with regard to the species and varieties of this genus; f. i. von Marenzeller rightly reproaches Mc Intosh, that in describing the rich material of the Challenger expedition, he considers *Laetmonice filicornis* as a constant, nearly invariable species, whereas *L. producta* is regarded by him to be very variable. Now examining the descriptions of different authors, we meet with two well characterized species: *Laetmonice filicornis* especially from Northern and *Laetm. producta* from Southern seas. *L. filicornis* rea-

1) Loc. cit. p. 44, Pl. VII, fig. 3; Pl. IV*A*, figs. 9—11.

2) Report on Polychaets coll. during the R. Dublin Soc. survey off the West-coast of Ireland, Sc. Proc. Royal Dublin Society, Vol. VIII (N. S.) 1893, p. 169.

3) Südjap. Anneliden, III, 1902, p. 4.

4) Beiträge zur Kenntniss der Verticalverbreitung der Borstenwürmer im Meere.

5) Annél. polychètes de San Thomé; Arch. Zool. Expérim. t. 54, 1914, p. 111.

ches a length at the most of 36 mm., has no more than 36 segments, usually a dorsal felt, 15 elytra, eye-peduncles without pigment, dorsal spines with 3 to 4 alternate fangs and neuropodial bristles with numerous closely packed slender pinnae. *L. producta* however can reach a length of 100 mm., possesses 45 to 47 segments, 18 to 20 elytra and eye-peduncles provided with eyes, whereas the glochideal spines possess 6 opposite fangs and the neuropodial bristles are provided with few and stiffer pinnae. Considering that both species have a very wide geographical distribution and are found at different dephts, I think it rather probable that there occur also varieties of both.

2. *Laetmonice malayana* Horst. Pl. XIII, figs. 4—6.

HORST, Zool. Mededeel. R. Museum Nat. Historie, Leiden, vol. II, 1916, p. 73.

Stat. 52. 9° 3'.4 Lat. S., 119° 56'.7 Long. E. South off Flores. Depth 959 M. 4 specimens.
Stat. 161. 1° 10'.5 Lat. S., 130° 9' Long. E. North off Misool. Depth 798 M. 5 specimens.
Stat. 178. 2° 40' Lat. S., 128° 37'.5 Long. E. North off Ceram. Depth 835 M. 18 specimens.

At the above-named Stations several specimens were collected of a *Laetmonice*-species, closely allied to *L. filicornis*. The largest of them (Stat. 161) has a length of 40 mm., but usually they are not longer than 32 mm.; the number of segments amounts to 34 (Pl. XIII, fig. 4). They are especially characterised by their large dorsal spines, the shaft of which is provided on one side with several series of distinct thorns; these bristles are stout, dark brown, in the anterior segments reaching to the median body-region, whereas those of the middle of the body extend beyond the anal extremity (Pl. XIII, fig. 5). Their distal end is provided with three small, triagonal, alternating fangs. The ventral bristles are provided with a dense series of slender pinnae, separated at their base by a short interval from the spine beneath them, that is not very long, hardly a third of the length of the pinnae (Pl. XIII, fig. 6). No dorsal felt occurs. There are 15 pairs of elytra, usually not overlapping each other, and covering the whole dorsum or leaving the middle of it bare; the ventral side of the body is smooth, not beset with papillae as in *L. filicornis*, whereas its median region is thin, translucent. The head bears on each side a long, cylindrical eye-peduncle, that in some specimens shows an inconspicuous ring of pigment beneath the tip. The tentacle has a basal part, nearly as long and broad as the eye-peduncles, and a slender distal joint, four to five times longer than the head, with an elongated clavate tip. The palps are rather long, reaching to the 10th segment; they taper distally and are beset with small hook-shaped papillae. There is a large oval frontal tubercle, covered with conical papillae.

3. *Laetmonice rugosa* Horst. Pl. XIII, figs. 7—9.

HORST, Zool. Mededeel. R. Museum Nat. Historie, Leiden, vol. II, 1916, p. 74.

Stat. 302. 10° 27'.9 Lat. S., 123° 28'.7 Long. E. North off Rotti Island. Depth 216 M. 3 specimens.

At the above-named Station three *Laetmonice*-specimens were dredged, a large one and two smaller ones, that by several characters can easily be distinguished from the other *Laetmonice*-

species. The largest of them has a length of 32 mm., whereas the smallest measures only 16 mm.; the number of segments amounts to 34. The dorsum of the body is covered by a felt, while its ventral side has a rugose appearance, due to the presence of closely packed globular papillae; its median region is not translucent as in the preceding species. The stout dorsal bristles are golden-yellow, half as long as the body, with three alternating pointed fangs beneath the hastate tip; their shaft shows a row of tubercles along one side (Pl. XIII, fig. 9). The short dorsal bristles are densely covered with small tubercles. The ventral bristles are not pinnate, but provided with four or five large spines (Pl. XIII, fig. 8).

The head is oval, nearly as long as broad, with two globular eye-peduncles, that are half as long as the basal joint of the tentacle (Pl. XIII, fig. 7). The tentacle has a rather long basal part, measuring two thirds of the length of the head and is covered near its base with papillae; its distal part is very long, not quite as long as the palps, and terminates in a clavate tip. The palps are not so long as in *L. malayana*, only reaching to the 6th segment.

4. *Laetmonice dubiosa* Horst. Pl. XIII, figs. 10—12.

HORST, Zool. Mededeel. R. Museum Nat. Historie, Leiden, vol. II, 1916, p. 74.

? Stat. 294. 10° 12'.2 Lat. S., 124° 27'.3 Long E. South coast of Timor. Depth 73 M. 1 specimen.
Stat. 302. 10° 27'.9 Lat. S., 123° 28'.7 Long E. North off Rotti. Depth 216 M. 1 specimen.

Besides the specimens of *Laetmonice rugosa* at Station 302 an other worm of the same genus was collected, that could not be identified with any known species. It measures 28 mm. in length, whereas the number of its segments amounts to 35. It is especially characterized by the shape of its large dorsal bristles; these are golden-yellow, with a smooth flat and rather broad shaft, that is suddenly constricted beneath the barbed tip. The tip is provided with three pairs of alternating, elongated, curved fangs (Pl. XIII, fig. 11). The bristles extend posteriorly over 10 to 12 succeeding segments. The ventral bristles have the usual shape and are provided with a dense beard of fine pinnae, separated by a short interval from the spine beneath them (Pl. XIII, fig. 12). The ventral side of the body is beset with scattered small papillae, that do not cover the whole parapodium (as in *L. rugosa*) but extend only over the proximal half of it, where the ventral cirrus arises. No dorsal felt occurs. There are 15 pairs of rather large elytra, overlapping each other and totally covering the dorsum. The head (Pl. XIII, fig. 10) is rounded, somewhat broader than long, with two globular eye-peduncles, each provided with a black eye-spot. The basal part of the tentacle is rather short, only somewhat longer than the eye-peduncles; its distal joint is wanting. The palps are rather long, dark-coloured in their distal part and beset with acute, needle-shaped papillae. A smaller specimen, long about 17 mm., collected at Station 294, presumably belongs to the same species.

5. *Laetmonice breve-pinnata* Horst. Pl. XIII, fig. 13.

HORST, Zool. Mededeel. R. Museum Nat. Historie, Leiden, vol. II, 1916, p. 75.

Stat. 311. Sapeh Bay, east coast of Sumbawa. Depth to 36 M. 1 specimen.

At the above-named Station a small *Laetmonice* (a young one?) was collected, that is especially characterized by the appearance of its ventral bristles; for instead of the beard of long pinnae, inserted on the tip of these bristles, there is a group of short cirri separated by a rather large interval from the spine beneath them and in this interval there occur three or four smaller spines. The tip of the neuropodium (Pl. XIII, fig. 13) bears a small curved appendix; the ventral cirrus, that measures two thirds of the length of the neuropodium, is swollen over the greater part of its length, but its distal extremity is filiform. All the large dorsal bristles are lost, but a smaller one shows three pairs of fangs, the inferior of which is the longest. No dorsal felt occurs. There are 15 pairs of rather large elytra, overlapping each other in the median dorsal line and totally covering the dorsum. The median ventral region is smooth, translucent. The head is rounded, broader than long, with two short globular eye-peduncles; no eyes were visible. The tentacle is about half as long as the palps; its basal part is rather large, somewhat longer than the eye-peduncles, whereas its distal joint is slender, with an elongated clavate tip. The palps are long, extending to the 10th segment.

The specimen measures 25 mm. in length, whereas the number of its segments amounts to 35.

6. *Laetmonice batheia* Horst. Pl. XIII, figs. 14 and 15.

HORST, Zool. Mededeel. R. Museum Nat. Historie, Leiden, vol. II, 1916, p. 75.

Stat. 221. 6° 24′ Lat. S., 124° 39′ Long. E. South-east of Binongka Island. Depth 2798 M. 2 specimens.

This species is especially characterized by its translucent body and by its long dorsal bristles, some of which are longer than the body and extend a great deal beyond its anal extremity (Pl. XIII, fig. 14). They are golden-yellow, with a dark coloured tip and the whole surface of their shaft is beset with scattered, acute tubercles. There are three pairs of fangs, not very large, triangular, the inferior of them being the largest. The ventral bristles (Pl. XIII, fig. 15) are provided with a beard of slender pinnae, separated by a large interval from the spine beneath them. The ventral cirrus is slender, not extending beyond half the length of the neuropodium. A dorsal felt occurs, that is covered with mud. There are 12 pairs of transparent elytra, not overlapping each other in the median dorsal line and leaving the middle of the dorsum bare. The ventral side of the body is villose, covered with small papillae. The head is rounded, somewhat broader than long, with two large, globular eye-peduncles, without pigment. The tentacle is wanting. The palps are very long, reaching to the 12th segment.

The largest specimen measures about 20 mm.; the number of its segments amount to 25.

7. *Laetmonice viridescens* n. sp. Pl. XIV, figs. 1 and 2.

Stat. 137. 0° 23′.8 Lat. N., 127° 29′ Long. E. Channel between Makjan and Halmaheira. Depth 472 M. 3 specimens.

At the above-named Station three small *Laetmonice*-specimens were dredged, that are characterised by a greenish hue of the ventral side as well as of the palps; the median ventral region is translucent. The dorsum is coated by a felt, that is covered with mud. There are 14 or 15 pairs of translucent elytra, leaving the median dorsal line bare. The stout dorsal spines are golden-yellow, rather long, those of the anterior segments reaching to the anal extremity, those of the median body-region extending somewhat beyond it (Pl. XIV, fig. 1). Their shaft is provided along one side with two or three series of widely dispersed, pointed tubercles; there are 3 pairs of fangs, alternating, not very elongated. The ventral bristles (Pl. XIV, fig. 2) are slender, with a beard of thin pinnae, that are not very numerous; the spine beneath them is rather short, not separated by an interval. The ventral cirrus is short, not tapering distally. The head is circular, as long as broad, with a pair of eye-peduncles, that are rather large, cylindrical, but without pigment. The palps are very long, extending to the 14th segment.

The species measures about 15 mm. in length, whereas the number of its segments amounts to 30.

8. *Laetmonice* sp. Pl. XIV, figs. 3 and 4.

Stat. 316. 7° 19'.4 Lat. S., 116° 49'.5 Long. E. West off Paternoster Islands. Depth 538 M. 2 specimens.

Two indifferently preserved specimens, that hardly can be identified with any of the preceding species, are characterised by the presence of rather long golden-brown coloured dorsal bristles; those of the median body-region extend beyond the anal extremity (Pl. XIV, fig. 3). Beneath their barbed tip, that is provided with 3 pairs of alternating, elongated fangs, the bristles are somewhat constricted, and their shaft, like those of *Laetm. batheia*, show several series of blunt conical tubercles, that are dispersed over the whole surface. The ventral bristles are provided with a beard of slender pinnae, without a spine beneath them (Pl. XIV, fig. 4). The ventral cirri are short, club-shaped, enlarged distally. A dorsal felt occurs, hiding the 15 pairs of elytra, that slightly overlap each other and cover the whole dorsum. The palps are very long, extending nearly to the middle of the body. Length of the body 23 mm.; the number of segments about 33.

9. *Laetmonice aphroditoides* Mc Intosh.

Mc Intosh, Challenger Annelida Polychaeta, p. 51, Pl. VII, figs. 4, 5; Pl. V A, figs. 11—15.
Izuka, The errantiate Polychaeta of Japan, 1912, p. 78, Pl. IX figs. 11—13.

Stat. 52. 9° 3'.4 Lat. S., 119° 56'.7 Long. E. North off Sumba. Depth of 959 M. 1 specimen.
Stat. 178. 2° 40' Lat. S., 128° 37'.5 Long. E. North off Ceram. Depth of 835 M. 1 specimen.

Two specimens from the above-named Stations must be identified with this species, that is characterised by its short papilliform tentacle, its globular ocular peduncles without a trace of pigment and the hairy distal region of its ventral bristles. The smaller specimen has a length of about 26 mm. and a breadth of 15 mm. (without bristles); the other one is larger.

The species was first described by Mc Intosh from the coast of Japan at a depth of 565 fathoms. It is hard to understand why Mc Intosh ranges this species among the genus *Laetmonice*.

Genus **Halogenia** Horst.

Agreeing in its main characters with *Hermione* and *Laetmonice*, but distinguished by the presence of dorsal bristles, terminating in a large, curved hook.

1. *Halogenia arenifera* Horst. Pl. XII, figs. 17—19.

Horst, Zool. Mededeel. R. Museum Nat. Historie, Leiden, vol. II, 1916, p. 63.

Stat. 49a. 8° 23'.5 Lat. S., 119° 4'.6 Long. E. Sapeh Strait. Depth of 69 M. 1 specimen.

Body ellipsoidal, long 12 mm., broad 7 mm.; the number of its segments is about 30. The ventral side is rough, densely beset with small tubercles, whereas the dorsum is entirely covered by sand-grains, that are adhering to the elytra. No dorsal felt could be detected. The parapodia are slender, conical, measuring in length two thirds of the breadth of the body. The sides of the body are flanked by long dorsal bristles, that are thin and flexible, pale-brown coloured (Pl. XII, fig. 17); they show a fine, longitudinal striation and terminate at their distal end in a large, dark-brown hook, bearing on its convex side a conical point. The bristle is surrounded by a sheath, that (presumably by the influence of the spirit) has a wrinkled appearance and above the hook passes in a rather long filiform appendage, that in its basal part shows a small enlargement. In the anterior segments these bristles are so long, that bent backward they almost reach to the end of the body. In front of these uncinate bristles some barbed setae are situated (Pl. XII, fig. 18), provided with a rather long spear-tip, behind which two or three recurved fangs occur. Each ventral bristle has about a dozen of spikes and a large spine at some distance beneath them (Pl. XII, fig. 19).

The head is rounded rectangular, somewhat broader than long, with a folded ridge at the right and left side. The tentacle has a stout, conical basal joint, almost half as long as the head; its terminal part is broken of. On each side there occurs an eye-peduncle, with a large black spot. The palps are long and tapering; bent backward they reach to the 10th segment. Also the tentacular-cirri are long and slender, provided with a terminal enlargement; the dorsal one is a third longer than the ventral one.

2. *Halogenia conchifera* Horst. Pl. XII, figs. 20 and 21.

Horst, Zool. Mededeel. R. Museum Nat. Historie, Leiden, vol. II, 1916, p. 64.

Stat. 260. 5° 36'.5 Lat. S., 132° 55'.2 Long. E. West off Great Kei Island. Depth of 90 M. 1 specimen.

A small worm, measuring 9 mm. in length and consisting of 27 segments. Its body is oblong ellipsoidal, flat; the ventral side is rough, beset with globular papillae, whereas the dorsum is covered by sand-grains and shells of Mollusca and Foraminifera, adhering to the scales and the bristles of the cirriphore-segments. The elytra are thin, translucent; presumably

there are 13 pairs of them, but their number can hardly be counted without doing too much damage to the unique specimen. The parapodia are long and slender, measuring about two thirds of the breadth of the body. The dorsal cirri are enormously long, with clavate tip, but without distinct terminal joint; the ventral cirri are slender, conical, not extending beyond the extremity of the foot. Instead of the glochideal setae there is a fascicle of slender, yellow, not very long bristles, terminating in a large, brown-coloured, curved hook (Pl. XII, fig. 20); their shaft is longitudinally striated and the hook is somewhat enlarged in the middle. The ventral bristles are slender, provided with 4 teeth, that decrease in size distally (Pl. XII, fig. 21). The head is oval, nearly as broad as long, with two short eye-peduncles, with pigment spots; between them the tentacle arises with a stout, cylindrical basal part. Its distal joint is long and slender, four to five times as long as the head, with a clavate tip. The palps are rather long, smooth, tapering distally.

Genus **Pontogenia** Claparède [1]).

Dorsal bristles (paleae) golden-yellow, slightly bent, serrated, arranged like a fan; ventral setae few, bifid. A dorsal felt usually present.

Four specimens of the genus *Pontogenia*, that hitherto has not been observed in the Malayan seas, were collected by the Siboga Expedition at the Stations 154, 204 and 305; they could not be identified with one of the species, already described from the Indian Ocean. *Pontogenia indica* [2]), mentioned by Grube from the Philippines and by Willey from Ceylon [3]), is characterized by a rather large number of segments (viz. 45) and by the presence of 18 pairs of elytra; afterwards Potts examined a species from Zanzibar, that possessed 15 pairs of scales and showed so much resemblance with *P. chrysocoma* from the Mediterranean, that it was described by him as a variety of that species (*P. chrysocoma* var. *minuta*) [4]). I was glad to have the opportunity to examine some specimens of *P. chrysocoma* from Naples in our Museum-collections and to compare them with the Siboga-specimens; though the discrimination is not very easy, because their setae are usually coated with detrital particles and their body is heavily contracted, I believe that the Siboga-worms represent two different species, which, though resembling each other in many characters, can easily be distinguished by the different appearance of their paleae.

Examining anew the question of the presence of elytra in *Palmyra*, I can no longer maintain my opinion, uttered some years ago in a paper "On a Bhawania-specimen" (Notes from the Leyden Museum, vol. XXX). I suppose that Mc Intosh has been mistaken and that the worm, collected by the Challenger Expedition at Station 233[a] (near Kobé, Japan) and with some hesitation identified by him with *Palmyra aurifera* Sav. [5]) also belongs to *Pon-*

1) Les Annélides Chétopodes du Golfe de Naples, p. 367.
2) Annulata Semperiana, p. 19, Pl. I, fig. 4.
3) Loc. cit. p. 246, Pl. I, fig. 5.
4) Loc. cit. p. 329, Pl. XX, figs. 26 and 27; Pl. XXI, figs. 35 and 36.
5) Challenger-reports, Annelida Polychaeta, p. 53, Pl. IX, figs. 1 and 2.

togenia; it looks very improbable that such able investigators as SAVIGNY [1]), AUDOUIN et MILNE EDWARDS [2]) and GRUBE [3]) (who among the Philippine-worms met with representants of both genera) should have overlooked the elytra. Moreover the appearance of the dorsal bristles (loc. cit. Pl. VI A, fig. 8) of the Challenger-worm does not agree with that of *Palm. aurifera*, as figured by AUDOUIN et M. EDWARDS. AUGENER, who examined a specimen of *Palm. aurifera* from Kings-Mills Islands and also could state the absence of elytra, comes to the same conclusion (Fauna Südwest-Australiens, Polychaeta, p. 80).

1. *Pontogenia nuda* n. sp. Pl. XIV, figs. 5—7.

Stat. 204. 4° 20′ Lat. S., 122° 58′ Long. E. Buton Strait. Depth from 75 to 94 M. 1 specimen.
Stat. 305. Solor Strait. Depth 113 M. 1 specimen.

The largest specimen measures 25 mm. in length and possesses 37 segments. It is specially characterized by the absence of a dorsal felt. The papillae covering the skin are much longer than those in *P. chrysocoma*. There are 15 pairs of elytra, the anterior of which are much smaller than the succeeding ones. Each scale (Pl. XIV, fig. 7) has somewhat the shape of a painters-palette, with a concavity in its posterior margin; its surface shows parallel striae, that arise from the posterior part of the median side. The paleae are rather broad, faintly curved and provided with an obtuse apex; they show two rows of cusps, lying at some distance from each other (Pl. XIV, fig. 5). These cusps are cup-shaped, alternating with each other and much more conspicuous than in the paleae of *P. chrysocoma*. Dorsally from them there occurs a short fascicle of capillary setae, but there is not formed a dorsal felt as in *P. indica* and *P. chrysocoma*. Ventrally there is an other group of slender capillary bristles; these however are so covered with detrital particles, that it is not possible to decide wether they are also provided with appendages, as observed by POTTS in *P. chrysocoma*, var. *minuta* (Pl. XXI, fig. 36). The teeth of the bifurcated apex of the neuropodial bristles (Pl. XIV, fig. 6) are more obtuse and shorter than in *P. chrysocoma*, except in the 2^{d} and 3rd segment, where they resemble those of *P. chrysocoma*, as figured by de St. Joseph (Pl. III, fig. 63)[4]). Like in the last-named species the neuropodium contains some small pinnate bristles, differing however from these of *P. chrysocoma* by the absence of denticulations in their distal part. The palps are beset with fine, spinous papillae, only visible by high power.

2. *Pontogenia spinosa* n. sp. Pl. XIV, figs. 8 and 9.

Stat. 154. 0° 7′.2 Lat. N., 130° 25′.5 Long. E. North off Waigeu Island. Depth 83 M. 2 spec.

At the above-named Station two *Pontogenia*-specimens, a large and a smaller one, were dredged, which undoubtedly cannot be identified with the preceding species. The largest specimen measures about 25 mm. in length and consists of 35 segments. The paleae (Pl. XIV,

1) Système des Annélides, p. 17.
2) Ann. d. Sc. natur. t. 27 (1832), p. 445, Pl. X, figs. 1—6.
3) loc. cit., p. 13.
4) Les Annél. Polych. des Côtes de France: Ann. Sc. nat., Zoologie, (S. IX), Vol. III, 1906.

fig. 8) are golden-yellow, slender, almost straight, only slightly curved in their inferior part; they have an acute apex, and are furnished over their total length with spinous serrations. These serrations are distally rather large, but inferiorly they are decreasing in length; apparently lying in a single line, they are actually situated on two rows, lying next to each other. This species possesses a conspicuous dorsal felt, consisting of fine articulated threads. The neuropodial bristles have a bifurcated apex, with two blunt cusps (Pl. XIV, fig. 9).

Genus **Aphrogenia** Kinberg [1]).

Characterized by the presence of sabre-like curved dorsal bristles. Ventral setae bifurcated.

The first representant of this genus in the Indo-Pacific region was described by AUGENER from the sea of South West Australia [2]); for, as rightly stated by this author, *Aphrog. dolichoceras* Hasw. [3]) must belong to an other genus.

1. *Aphrogenia villosa* Horst. Pl. XIV, figs. 10—12.

HORST, Zool. Mededeel. R. Museum Nat. Historie, Leiden, vol. II, 1916, p. 76.

Stat. 273. Anchorage off Pulu Jedan, East coast of Aru Islands. Depth 13 M. 1 specimen.

The length of the worm is about 12 mm.; the number of its segments amounts to 30.

Dorsally the body is of a grey-brown colour, with a faint nacreous gloss; its ventral side shows a row of black spots on each side of the median line. There are 13 pairs of elytra; they much resemble those of *Aphrog. margaritacea* Aug. Each elytron (Pl. XIV, fig. 10) is rounded rhomboidal, somewhat pointed at its median side, laterally provided with a slight concavity next to the place of attachment; it is surrounded by a colourless margin and especially in the centre shows a yellow-grey pigment. Its surface like in *Hermione* is finely, radially striated, whereas very minute papillae scatteredly occur. The large dorsal bristles (Pl. XIV, fig. 11) are curved like a sabre and in this regard agree with those of *Aphrog. alba* and *margaritacea*; however their apex is surrounded by a crown of short villi, whereas their shaft is longitudinally striated and shows numerous transversal ridges, extending only over a part of the periphery of the bristle. In the elytrophore-segments these bristles are much longer than in the cirriphore-ones and arch over the dorsum. The ventral bristles (Pl. XIV, fig. 12) are brown-coloured, simply bifurcated, without accessory teeth. The dorsal cirri are very long, with a clavate terminal joint; however the ventral cirri are short, with a clavate tip, hardly reaching to the extremity of the foot. The head is oval, somewhat broader than long, with two conspicuous eye-stalks, provided with black pigment-spots. Between them a slender tentacle arises, 4 to 5 times as long as the head, provided with a clavate distal joint. The palps are not very long, tapering distally.

1) Loc. cit. p. 6.
2) Loc. cit. p. 93, Pl. II, figs. 1 and 2.
3) A monograph of the Australian Aphroditea: Proc. Linn. Soc. Vol. 7, p. 273, Pl. VII, figs. 4—7.

2. *Aphrogenia villosa*, var. *laevis* n. v.

Stat. 285. 8° 39'.1 Lat. S., 127° 4'.4 Long. E. Anchorage South coast of Timor. Depth 34 M. 1 specimen.

At the South coast of Timor a worm was dredged, that must be considered as a variety of the preceding species. It has a length of 8 mm.; its dorsum is dark grey with a glossy appearance, whereas on the ventral side a row of indistinct black spots occurs on each side of the median line. Like in *Aphrog. villosa* the dorsal bristles of the elytrophore-segments are longer than those of the cirriphore-ones and arch over the dorsum; these bristles are also provided at the tip with a cap of villi, however their shaft is smooth and does not show any trace of transversal ridges.

3. *Aphrogenia nigropunctata* Horst. Pl. XIV, fig. 13.

Horst, Zool. Mededeel. R. Museum Nat. Historie, Leiden, vol. II, 1916, p. 77.

Stat. 37. Sailus Ketjil, Paternoster Islands. Depth 27 M. and less. 1 specimen.
Stat. 315. Anchorage east of Sailus Besar, Paternoster Islands. Depth up to 36 M. 1 young specimen.

A small worm, measuring only 7 mm. in length and consisting of about 27 segments.

The body is pale-grey coloured with a black spot on the dorsum of the parapodia of the cirriphore-segments. There are 13 pairs of elytra, much resembling in shape and appearance those of *Aphrog. villosa*, only somewhat more elongated transversally; besides the minute papillae they show some larger round cellular figures, as present in the elytra of *Aphrog. alba*.

The dorsal bristles (Pl. XIV, fig. 13) of the elytrophore-segments are not so long as in *Aphrog. villosa*, and do not reach to the median dorsal line; they are pale-yellow, longitudinally striated and possess at the tip a cluster of coarse, highly refractive tubercles, that somewhat resembles the swelling below the tip of the short dorsal bristles of *Hermione hystrix*.

In the specimen of Stat. 315 these tubercles are not visible; there only a cap-like swelling is present. The ventral bristles are simply bifurcated, without accessory teeth. The dorsal cirri are very long, with a clavate terminal joint; the ventral ones are rather short, conical, with an enlarged tip, not reaching to the distal end of the foot.

Sub-family Iphioninae.

Body short, consisting of 29 segments. Proboscis with $^9/_9$ papillae and four jaws with a denticulated edge. Only two antennae and a facial tubercle instead of the tentacle. Elytra 12 or 13 pairs, provided with hexagonal areas, situated on segments 2, 4, 5, 7, 9 . . . . . 23 and 27. Parapodia apparently uniramous, their notopodial fascicle arising at their anterior side; notopodial bristles slender, with cup-shaped transverse rows, neuropodial ones stouter, with simple hook and a close series of transverse spinose rows beneath it.

Genus **Iphione** Kinberg[1]).

Prostomium normal, with two pairs of small eyes and a small tubercle in the middle line posteriorly. Lateral antennae with elongated basal part. A nuchal collar present. Elytra showing a secondary areolation beneath the superficial one. Notopodial fascicle very prominent.

1. *Iphione muricata* (Sav.).

SAVIGNY, Système des Annélides, p. 21, Pl. III, fig. 1.
GRUBE, Annulata Semperiana, p. 21.
GRAVIER, Annélides polychètes de la Mer rouge, p. 226, Pl. IX, figs. 129—135.
WILLEY, Polychaeta, Ceylon pearl oyster report, p. 246, Pl. I, fig. 6.

Stat. 34. Anchorage off Labuan Pandan, Lombok. Reef. 1 specimen.
Stat. 49a. 8° 23'.5 Lat. S., 119° 4'.6 Long. E. Sapeh Strait. Depth 69 M. 1 specimen.
Stat. 104. Sulu harbour, Sulu Island. Depth 14 M. 1 young specimen.
Stat. 115. East side of Pajunga Island. Reef. 1 specimen.
Stat. 125. Anchorage of Sawan, Siau Island. Depth 27 M. 1 specimen. Reef. 1 specimen.
Stat. 127. Taruna Bay, Great Sangir Island. Depth 45 M. 2 specimens.
Stat. 131. Anchorage off Beo, Karakelang Islands. Reef. 1 specimen.
Stat. 142. Anchorage off Laiwui, coast of Obi Major. Reef. 1 specimen.
Stat. 144. Anchorage north of Damar Island. Reef. 2 specimens.
Stat. 162. Between Loslos and Broken Islands, West-coast of Salawatti. Depth 18 M. 1 specimen.
Stat. 164. 1° 42'.5 Lat. S., 130° 47'.5 Long. E., South off Salawatti Island. Depth 32 M. 1 specimen.
Stat. 174. Waru Bay, North coast of Ceram. Reef. 1 young specimen.
Stat. 193. Sanana Bay, East-coast of Sula Besi. Reef. 7 specimens.
Stat. 213. Saleyer Anchorage and surroundings. 5 specimens.
Stat. 220. Anchorage off Pasir Pandjang, West coast of Binongka. Reef. 2 specimens.
Stat. 225. Off South-Lucipara Island. Depth 894 M. 3 specimens.
Stat. 231. Ambon Anchorage. Reef. 8 specimens.
Stat. 234. Nalahia Bay, Nusa Laut Island. Reef. 2 specimens.
Stat. 240. Banda Anchorage. Depth 9—45 M. 1 young specimen.
Stat. 250. Anchorage off Kilsuin, West-coast of Kur Island. Reef. 1 specimen.
Stat. 273. Anchorage off Pulu Jedan, East coast of Aru Islands. Depth 13 M. 1 specimen.
Stat. 282. 8° 25'.2 Lat. S., 127° 18'.4 Long. E. Between Nusa Besi and N. E. point of Timor. Depth 27—54 M. 2 specimens.
Stat. 301. 10° 38' Lat. S., 123° 25'.2 Long. E. Pepela Bay, East coast of Rotti Island. Reef. 1 specimen.
Stat. 310. 8° 30' Lat. S., 119° 7'.5 Long. E. Sapeh Bay, Sumbawa. Depth 73 M. 1 young specimen.
Stat. 315. Anchorage East off Sailus Besar, Paternoster Islands. Depth to 36 M. 1 specimen.
Aru Islands, East coast. Van Kampen. Febr. 1907. 1 specimen.

As proved by the long list of Stations, quoted above, *Iphione muricata* is a universally distributed worm in the Malay archipelago; it was already found by SEMON in the neighbourhood of Amboina[2]) and by MICHAELSEN near Turtle island[3]). Some specimens show a dark pigment along the margin of the elytra, whereas an oblique longitudinal band occurs over their middle. Because of their lateral situation the eyes are hardly visible dorsally. The large fascicles of

1) Loc. cit. p. 8.
2) COLLIN, Polychäten, p. 741: SEMON, Zool. Forschungsreisen in Australien u. d. Mal. Archipel.
3) AUGENER, loc. cit. p. 98.

notopodial bristles are very conspicuous; these setae, as first stated by GRAVIER, though much more slender than the neuropodial ones, are also provided with transverse laciniated fringes, that have the shape of cups, open at one side, "qui s'emboitent les uns dans les autres." Distally these cups are placed closely next to each other and are closed, whereas inferiorly they are opened and filled with strongly refractive granules.

That *Bylgia* Theel[1]) should be allied to *Iphione*, as asserted by DARBOUX[2]), appears very dubious to me; for *Bylgia elegans* does not possess a facial tubercle and the antennae emerge from the middle of the frontal margin of the head in stead of laterally as in *Iphione*. Moreover the elytra of *Bylgia* do not show an areolate structure and its dorsal bristles are stouter than the ventral ones. AUGENER[3]) suggests that *Bylgia* is a mutilated *Antinoë*.

Genus **Iphionella** Mc Intosh[4]).

Prostomium rudimentary, without eyes. No secondary areolation of the elytra. Notopodial setae shorter than the neuropodial ones. Besides the usual bristles the neuropodial fascicle contains dorsally some slender ones, furnished with spirally arranged rows.

1. *Iphionella cimex* (Qtrf.). Pl. XV, figs. 1 and 2.

DE QUATREFAGES, Histoire naturelle des Annelés, vol. I, p. 270.
MC INTOSH, Challenger-Annelida, p. 58, Pl. IX, figs. 4—6, Pl. XVII, fig. 3, Pl. VIII A, figs. 7 and 8.

Stat. 101. 6° 15′ Lat. N., 120° 21′ Long. E. Sulu Sea. Depth 1270 M. 1 specimen.
Stat. 297. 10° 39′ Lat. S., 123° 40′ Long. E. South off Rotti. Depth 520 M. 1 specimen.

Length of the specimen of Stat. 101 13 mm.; its breadth (bristles included) 9 mm.

This species, though much resembling *Iphione muricata*, distinguishes itself immediately by its smoother, more flattened appearance and by the shorter dorsal bristles. Probably it is a deep-sea form, for the Challenger-specimen was dredged south off Mindanao at a depth of 500 M. and the Siboga-specimens were caught at 1270 and 520 M.; of the specimen from Malacca Strait, brought home by GAUDICHAUD, we do not know the depth in which it was found. Though MC INTOSH has given an accurate description of the remarquable, rudimentary head, I think it not superfluous to publish a figure of it, to show in how many regards it differs from that of *Iphione muricata*; at the base of the palps an indistinct, conical organ is visible (Pl. XV, fig. 1), that probably may be considered as a reduced antenna. The neuropodial fascicle in its dorsal part besides the usual bristles contains some slender, straight setae, furnished distally with spirally arranged fringes; these bristles (Pl. XV, fig. 2) seem to have been overlooked by MC INTOSH. With regard to the structure of the elytra MC INTOSH has already observed that the secondary areolation of the large hexagonal areas in this species is not the same as in *Iphione muricata*. Of the last-named species WILLEY rightly states[5]) "focussing through the

1) Les Annélides Polychètes des mers de la Nouvelle-Zemble, 1879, p. 20, Pl. figs. 13—16.
2) loc. cit. p. 58.
3) Polychaeten von Frans-Joseph-Land: Zoölog. Anzeiger, 1913, p. 202.
4) loc. cit. p. 58.
5) loc. cit. p. 247.

superficial secondary areolation, another reticulum, which may be called the interstitial reticulum, comes into view, the meshes of which do not coincide with the former." This is not the case in *Iphione cimex*; here nothing is to be seen as the thick wall of the areolae.

Sub-family Polynoinae.

Body usually short, rarely elongate, consisting of 17 segments (*Oligolepis*) or more. Elytra 9 pairs (*Oligolepis*) or more, inserted on segments 2, 4, 5, 7 9 .... 23, 26, 29 etc., partly or totally covering the dorsum. Prostomium with 3 antennae and usually two pairs of sessile eyes. Proboscis with $^9/_9$ papillae and four horny jaws with a smooth edge. Bristles unjointed. Two anal cirri.

I. Lepidonotidae.

Genus **Lepidonotus** Leach.

Including only those species, that consist of 27 somites and are provided with 12 pairs of elytra; notopodial bristles all similar.

1. *Lepidonotus acantholepis* Gr. Pl. XV, figs. 3 and 4.

Grube, Annulata Semperiana, p. 24, Pl. II, fig. 1.
Michaelsen, Polychaeten von Ceylon, 1892, p. 5.

Stat. 50. Bay of Badjo, West coast of Flores. Shore exploration. 1 specimen.
Stat. 220. Anchorage off Pasir Pandjang, West coast of Binongka. Reef. 2 specimens.
Stat. 234. Nalahia Bay, Nusa Laut Island. Reef. 1 specimen.
Stat. 285. 8° 39′.1 Lat. S., 127° 4′.4 Long. E., South coast of Timor. Depth 34 M. 1 specimen.

This species, mentioned by Grube from Upolu and the Philippines, was afterwards found by Driesch in the neighbourhood of Ceylon. Like in the specimens from the Philippines and those from Ceylon also in some of the Siboga-specimens the elytra are much smaller than in the worm from Upolu and therefore also the number of tubercles is much smaller than in the last-named specimen; the tubercles also are much more different in size, as might be inferred from Grube's figure. The surface of these tubercles shows a reticular structure, due to the presence of small scales, that sometimes acquire the appearance of little spines; along the margin of the elytra here and there occur short cylindrical papillae. Michaelsen has rightly stated, that the ventral bristles are not bifid, as mentioned by Grube, but trifid; for there are two small conical teeth at the base of their large faintly bent tip (Pl. XV, fig. 3). They correspond to the largest teeth of the distal transverse row in other Lepidonotus-species. The dorsal bristle-fascicle is rudimentary and consists of a stout acicula and some few slender bristles, serrated along both edges and transversely grooved (Pl. XV, fig. 4). There are two long anal cirri, measuring a third more than the last dorsal cirri. If this species is to be ranged in the genus *Lepidonotus*, henceforward in the diagnosis of that genus the phrase "elytra, covering the dorsum entirely" ought to be cancelled.

2. ? *Lepidonotus adspersus* Gr. Pl. XIV, fig. 14.

GRUBE. Anneliden-fauna der Philippinen, p. 30, Pl. II, fig. 7.

Stat. 299. 10° 52.'4 Lat. S., 123° 1'.1 Long. E. Cyrus Bay, South-coast of Rotti Island. Depth 34 M. 1 specimen.

A specimen, dredged at the above-named Station, presumably must be identified with *Lep. adspersus*, described by GRUBE from the Philippines. It has a length of about 15 mm. and a breadth of 6 mm. (with bristles); it is dark coloured, the head as well as the elytra being provided with a blackish pigment. The head is more long than broad with a shallow median dorsal groove; its anterior eyes are situated on the lateral prominences, whereas the posterior ones lie hidden under a nuchal collar, that has no papillae on its anterior border. The lateral antennae are inserted upon stout, blackish frontal stalks; they are provided with a black ring on their dilated subterminal part, beneath the filiform tip, like in the tentacular and dorsal cirri and the ventral cirrus of the first setigerous parapodium. The tentacle is absent. The elytra (Pl. XIV, fig. 14) are elongated-oval, with their scar of attachment situated a bit eccentrically; nearly their whole surface is covered with small, pointed tubercles, among which there is a number of larger ones. Some of them, especially in the area of the scar of attachment, are surrounded by black pigment, whereas there is also sometimes a black patch in front of the latter. Along the posterior and exterior border of the scales there is a row of stiff, cylindrical papillae, all of the same length. Both lobes of the parapodia are nearly of the same length, pointed triangular, and provided with brown aciculae and yellow setae. The notopodial bristles, with a slender distal tip, are covered with densely crowded, spirally arranged laciniate fringes; the neuropodial ones have a secondary tooth beneath the tip and about ten denticulated rows on their dilated subterminal part, the distal of which bear some large teeth. The dorsal cirri are nearly as long as the neuropodial fascicles; the ventral cirri are tapering and do not reach beyond the origine of the last ones.

3. *Lepidonotus albo-pustulatus* Horst. Pl. XIV, figs. 15 and 16.

HORST, Zool. Mededeel. R. Museum Nat. Historie, Leiden, vol. I, 1915, p. 4.

Stat. 305. Solor Strait. Depth 113 M. 1 specimen.

A nice brownish worm, with golden-yellow bristles; it measures nearly 25 mm. in length, whereas its breadth (with bristles) is about 10 mm. The tentacle and the lateral antennae are about of the same length, with a white filiform tip and subterminal dilatation; the palps are rather short, with a stout basal part, tapering distally. The eyes of each side lie close to one another; the anterior of them are situated on the lateral prominences of the head. The elytra (Pl. XIV, fig. 15) are overlapping each other in the median dorsal line; they are oval, with a smooth margin. The free part of their surface is brownish-red, whereas the covered area, like the scar of attachment is whitish; in front of the last one, there is a dark-brownish spot, whereas behind it there occurs a group of large white spines, passing into a band of obtuse, wart-like papillae, situated along the inner margin and visible by low power; examined

with high power the total surface of the scale appears to be covered with small tubercles and the brown-pigment to be distributed over a net with small meshes. The parapodia are almost entirely constituted by the large neuropodial lobe (Pl. XIV, fig. 16); this is provided with an obtuse conical posterior lip, whereas the anterior lip by an incision near the tip of the acicula is divided in a large trapezoidal ventral part and a papilliform dorsal one. Its bristles are long, with a short subterminal dilated part, with a tooth-like secondary process beneath the tip and about ten indistinct denticulated rows; in the dorsal part of this fascicle there are some bristles, that have the subterminal part slightly dilated, with several laciniated fringes but without a tooth beneath the acute tip. The notopodial lobe is rudimentary, conical, containing only a few short, straight setae, that are provided with spirally arranged laciniated rows and have a smooth tip. The dorsal cirri are brown, with a colourless filiform tip and a dark subterminal dilatation; they do not extend to the distal extremity of the neuropodial fascicle. The ventral cirri, also brown at the base, with a whitish filiform tip, are short and only reach to the origin of the fascicle.

The species is characterized by the conspicuous appearance of its elytra and by the structure of its parapodia.

4. *Lepidonotus carinatus* Potts.

POTTS, loc. cit. p. 334, Pl. XVIII, fig. 1.

Stat. 53. Bay of Nangamessi, Sumba. Depth up to 36 M. 2 specimens.
? Stat. 99. 6° 7′.5 Lat. N., 120° 26′ Long. E. Anchorage of North Ubian. Depth 16—23 M. 1 specimen.

This nice little Polynoïd was first found on the reef of Praslin Island (Seychelles) and described by POTTS. The largest of the Siboga-specimens has a length of 22 mm. It is a true *Lepidonotus*, with 12 pairs of elytra, that are elliptical of shape and have a smooth margin; its dorsum shows a dark median stripe, as the median border of each elytron is coloured by black pigment, that is somewhat spread over the anterior and posterior margin. There are two longitudinal keels on the posterior half of each elytron, distinguished from those of *Halosydna fulvovittata*, that they are already visible with low power; examined with high power, each keel proves to be beset with a row of keeled tubercles. The remaining surface of the elytron is densely covered with flattened tubercles: (1) smaller ones, with a strongly refringent point in the centre, and (2) larger ones with a keeled tubercle on the tip, both whitish between the net of black pigment cells. The dorsal setae, with very slender tips, are in their distal half only provided with fringes; the ventral bristles, with a small spur beneath the apex, have but a small number (8 to 10) of spinous rows. The aciculae are of a brown colour.

It may be suggested, that *Polynoë* (*Lepid.*) *quadricarinata* Gr.[1]) from the Red sea will prove to be identical with *Lepid. carinatus*.

5. *Lepidonotus carinulatus* Gr. Pl. XV, fig. 10.

GRUBE, Annulata Semperiana, 1878, p. 26, Pl. III, fig. 2.

1) Beschreib. einiger von GEORG RITTER VON FRAUENFELD ges. Anneliden des Rothen Meeres, p. 2.

MARENZELLER, Südjapanische Anneliden, 1902, III. p. 9, Pl. I, fig. 4.
WILLEY, Ceylon Pearl oyster report 1905, p. 248, pl. I, figs. 7—11.
POTTS, Polychaeta of the Indian Ocean, 1910, p. 331.

Stat. 51. Madura Bay in Molo Strait. Depth from 69 to 91 M. 4 specimens.
Stat. 93. Pulu Sanguisiapo, Sulu Archipelago. Depth 12 M. 1 incomplete specimen.
Stat. 104. Sulu Harbour. Depth 14 M. 1 incomplete specimen.
Stat. 213. Saleyer Anchorage. Reef. 2 specimens.
Stat. 273. Anchorage off Pulu Jedan, East coast of Aru Islands. Depth 13 M. 1 specimen.
Stat. 274. 5°28'.2 Lat. S., 134°53'.9 Long. E. Depth 57 M. 1 specimen.
Aru Islands, Jedan Island. VAN KAMPEN, Febr. 1907. 2 specimens.
4°.4 Lat. S., 113°.2 Long. E., South off Borneo. VAN KAMPEN, Oct. 1908. 1 specimen.

This species, "the most abundant representative of the genus *Lepidonotus* on the Ceylon pearl-banks" according to WILLEY, first described by GRUBE from the Red Sea[1]), was afterwards found by SEMPER in the neighbourhood of the Philippines, by BEDOT near Ambon[2]) and mentioned by POTTS from the Indian Ocean (Saya de Malha banks etc.), by MARENZELLER from the Liukiu Isles, by Fauvel from the Persian Gulf[3]).

The anterior elytra in our specimens, like in those of Ceylon, are beset with spheroïdal papillae (Pl. XV, fig. 10); they bear keel-shaped elevations, not spines, as figured by WILLEY (fig. 9). MARENZELLER, WILLEY and FAUVEL rightly state, that the ventral spines are not "apice simplici", as mentioned by GRUBE, but obviously "bidentate".

6. *Lepidonotus cristatus* Gr. Pl. XV, fig. 8.
(*Pol. tumorifera* Gr.).

GRUBE, Beiträge zur Anneliden-fauna der Philippinen, 1878, p. 27, Pl. II, fig. 3.
MC INTOSH, Challenger Reports, Annelida Polychaeta, 1885, p. 67, Pl. XI, fig. 2; Pl. XVII, fig. 1; Pl. XIA, figs. 10 and 11.
GRAVIER, Annél. Polychètes de la Mer rouge, 1901, p. 210, Pl. VII, figs. 104—110; Pl. IX, fig. 136.
POTTS, Polychaeta of the Indian Ocean, p. 332.

Stat. 49a. 8°23'.5 Lat. S., 119°4'.6 Long. E. Sapeh Strait. Depth 69 M. 2 specimens.
Stat. 51. Madura Bay etc. (Molo Strait). Depth 69—91 M. 1 specimen.
Stat. 133. Anchorage off Lirung, Salibabu Island. Depth up to 36 M. 1 specimen.
Stat. 193. Sanana Bay, East coast of Sula Besi. Reef. 2 specimens.
Stat. 234. Nalahia Bay, Nusa Laut Island. Reef. 1 specimen.
Stat. 248. Anchorage off Rumah Lusi (Tiur Island). Depth till 54 M. 1 specimen.
Stat. 250. Anchorage off Kilsuin, West coast of Kur Island. Depth 20 to 45 M. 1 specimen.
Stat. 315. Anchorage east of Sailus Besar, Paternoster Islands. 3 incomplete specimens.
Pulu-Weh. P. BUITENDIJK. 1 specimen.

Of this species, already met with near Amboina by BEDOT[4]), specimens were collected at the above-named Stations; the largest of them (Stat. 248) has a length of 40 mm., whereas the smallest (Stat. 250) measures only 23 mm. All are characterised by the large elytral crests,

1) Monatsber. Berl. Akademie, 1869, p. 488.
2) MALAQUIN et DEHORNE, loc. cit., p. 344.
3) Annél. polychètes du Golfe persique, 1911, p. 367, fig. 1.
4) MALAQUIN et DEHORNE, loc. cit. p. 345.

whether bilobed or undivided, smooth and flabby, or showing the great conical papillae, described by GRAVIER and MC INTOSH; the remaining part of the elytron is covered with small papillae, having a globular base and one to four chitinous spikes. The two pairs of eyes are nearly equal in size and there is a distinct nuchal collar, with two lateral papillae. The parapodia of the 2d segment have a long ventral cirrus and bear a fascicle of ventral setae, differing from those of the remaining body, as first noted by GRAVIER. The real structure of the ordinary ventral bristles (Pl. XV, fig. 8) is not easily to understand and I presume, that it escaped GRUBE as well as MC INTOSH; for these setae have a nearly triangular transverse section and like a sword have a sharp edge (the concave side), whereas the dorsal margin (the convex side) is broadened. Their subterminal dilatation bears on both lateral sides the usual transverse fringes, that however do not lay in the same line at the right and left side, but are alternating with each other. These fringes are laciniate and their teeth increase in size distally, whereas those situated next to the sharp edge are the largest; the two distal fringes usually have only a single tooth. In the specimens of the Red Sea, described by GRAVIER, these large teeth appear to be entirely wanting (fig. 218). *Polynoë tumorifera* Gr.[1]) from Borneo presumably will prove to be identical with *Lepid. cristatus* Gr.

7. *Lepidonotus cristatus* var. *echinata* Potts.

POTTS, Polychaeta of the Indian Ocean, p. 334, Pl. XVIII, figs. 4 and 5.

Stat. 96. Sulu Archipelago, South east side of Pearl-bank. Depth 15 M. 1 specimen.
Stat. 99. 6°7'.5 Lat. N., 120°26' Long. E. Anchorage off North Ubian. Depth 16—23 M. 1 specimen.
Stat. 144. Anchorage north of Damar Island. Depth 45 M. 1 specimen.
Stat. 154. 0°7'.2 Lat. N., 130°25'.5 Long E., North off Waigeu Island. Depth till 83 M. 1 specimen.
Stat. 273. Anchorage off Pulu Jedan, East coast of Aru Islands. Depth 13 M. 1 specimen.
Pulu Weh. P. BUITENDIJK. 1 specimen.

In the specimens of Stat. 144 and 154 the chitinous patches of the elytra are rust-coloured. Those of Stat. 96 and of Pulu-Weh have a carmine colour and a dark spot, surrounded by a paler ring on the midst of the elytra; the bilobed crest is faintly developed and consists only of a couple of slight elevations, provided with a pair of white tubercles. The papillae upon the remaining surface of the elytron have a particular shape and are beset with 4 or 5 blunt tubercles. In variance with Mr. POTTS I observed a conspicuous spur beneath the apex of nearly all ventral setae.

8. *Lepidonotus cristatus* var. *ornata* Potts.

POTTS, loc. cit., p. 333, Pl. 18, figs. 6 and 7.

Stat. 260. 5°36'.5 Lat. S., 132°55'.2 Long. E. West off Great Kei Island. Depth 90 M. 1 specimen.

A *Lepidonotus*-specimen, measuring 16 mm. in length and 8 mm. in breadth, must be

1) Bemerk. über die Familie der Aphroditëen, p. 11: Sitzber. d. Schles. Gesellsch. f. Vaterl. Cultur, 1875.

identified with the above-named variety of POTTS, though its characters are somewhat deviating from the description of that author; f. i. the elytra lack the large oval chitinous patches, described and figured by POTTS. They are densely covered with papillae, each bearing one, two, three or a real crown of spinelets on their tip, all tinged with red. Among them there is a larger kind of red papillae, spherical in shape, not covered over their surface with spines but with small scales and with a nipple-shaped tip.

9. *Lepidonotus javanicus* n. sp. Pl. XVII, figs. 1 and 2.

Stat. 15. 7° 2'.6 Lat. S., 115° 23'.6 Long. E. South off Kangeang Island. Depth 100 M. 2 specimens.

Length of the worm about 14 mm., whereas its broadth without bristles is $4^1/_2$ mm. The head is more broad than long, with two large eyes, that lie close to each other on its posterior half, partly covered by the nuchal collar, that is provided with two lateral papillae. The distal joint of the lateral antennae, twice as long as the head, is provided with a filiform tip; that of the tentacle is somewhat longer. The palpi are slender, nearly as long as the tentacle. Of the tentacular cirri the dorsal one is the longest. The elytra (Pl. XVII, fig. 1) are elliptical or faintly reniform without any marginal appendages, with the scar of attachment situated somewhat eccentrically; their uncovered part is beset with a great number of rather large obtuse-conical papillae, already visible by low power, whereas on the covered part there occurs a band of small tubercles. However in an other specimen from the same locality these papillae are entirely absent and on the granular surface only some branching nerve-stems are visible. Both lobes of the parapodia show an elongated appendage, enclosing the acicula; that of the ventral one is the largest. The neuropodial bristles (Pl. XVII, fig. 2) have a wedge-shaped, dilated distal end, with faint transverse striae, but without secondary process; the notopodial setae are slightly curved, with faint transverse rows and an obtuse tip. The ventral cirrus does not reach to the distal extremity of the neuropodial lobe; the dorsal cirrus is very long, extending beyond the end of the neuropodial fascicle.

This species is easily recognisable by the conspicuous papillae of its elytra and the feature of its bristles.

10. *Lepidonotus malayanus* Horst. Pl. XVII, figs. 3—5.

HORST, Zool. Mededeel. R. Museum Nat. Historie, Leiden, vol. I, 1915, p. 7.

Stat. 156. 0° 29'.2 Lat. S., 130° 5'.3 Long E. West off Waigeu Island. Depth 469 M. 1 specimen.
Stat. 262. 5° 53'.8 Lat. S., 132° 48'8 Long E. West off Great Kei Island. Depth 560 M. 2 specimens.

A true *Lepidonotus*-species, 18 mm. long and consisting of 27 segments, could not be identified with one of the known species. The head (Pl. XVII, fig. 3) is rounded, nearly as long as broad, with the eyes situated close to each other in its posterior half, like in *Polynoë crinoidicola* Potts; the anterior ones are the largest and lie behind the lateral prominence. The distal joint of the tentacle is nearly as long as the head, terminating with a filiform tip like all the cirri; the lateral antennae are only slightly shorter. The palps are smooth,

twice as long as the lateral antennae. The tentacular cirri, equal in length, nearly as long as the palps. A broad nuchal collar with two papillae. The scales (Pl. XVII, fig. 4) do not overlap, but leave the middle of the dorsum uncovered (in a smaller specimen from Stat. 156, the scales cover the dorsum entirely); they are auriculate with a conspicuous scar of attachment, lying eccentrically in its posterior half, from which several branched nerve-stems are emerging. The surface of each scale is smooth except a band along its border especially at the outer side, that is covered with small knob-shaped papillae; the margin is without cilia. Both lobes of the parapodia have an elongated triangular shape, and are nearly equal in length, enclosing the acicula. However the notopodial fascicle is much less developed than the neuropodial one and consists of a dozen short, slightly curved bristles, with a smooth, blunt tip and faint, densely crowded, circular ridges. The neuropodial setae (Pl. XVII, fig. 5) are about twice as long as the notopodial ones, with a dilated subterminal part, that shows faint transverse rows and a distinct secondary process beneath the tooth-like tip. The dorsal cirrus much longer than the neuropodial fascicle; the ventral cirrus two-thirds of the length of the neuropodial branch.

The species is characterised by the situation of its eyes, its large scales without cilia on the margin and its slender ventral bristles, without denticulated rows.

11. *Lepidonotus ruber* n. sp. Pl. XVII, figs. 6 and 7.

Stat. 299. 10° 52'.4 Lat. S., 123° 1'.1. Long. E. Buka Bay, south-coast of Rotti Island. Depth 34 M. 1 specimen.
Stat. 310. 8° 30' Lat. S., 119° 7'.5 Long E. East-coast of Sumbawa. Depth 73 M. 1 specimen.

Head nearly as long as broad. Both pairs of eyes on its posterior half; the anterior pair behind the lateral prominences of the head, the other one in front of its posterior margin. The frontal stalks of the lateral antennae like the basal part of the tentacle dark; the distal joint of the antennae twice as long as the head, with a black ring on the dilated part beneath the filiform tip. The distal joint of the tentacle only a trifle longer. The palps stout at the base, tapering distally. The scales (Pl. XVII, fig. 7) touch each other in the median dorsal line; they are elongate-oval, with a fringe of rather long filaments on their posterior and on the greatest half of their internal and external border. Their surface is almost totally covered with red-coloured tubercles. Some of them in the area of the scar of attachment and around it are large, globular or spinous; those on the covered part of the elytron, in front of the scar of attachment, are smaller, carinate, those on the region behind the ridge are small and spinous. The anterior pair of elytra (Pl. XVII, fig. 6) are elliptical and over half their periphery are surrounded by stiff cilia nearly equal in length; their surface shows round areolae, from the centre of which a spine arises. Especially those in the midst of the scale are large, while along the margin they have a cylindrical stem and a crown of three or more spinelets.

The parapodia have the ventral lobe much stronger developed than the dorsal one; the neuropodial bristles have a rudimentary tooth beneath the tip or this tooth is quite absent. On their dilated subterminal part there are 4 or 5 laciniate fringes, faintly developed, with some larger teeth in the distal row. The notopodial bristles are slender, feeble, provided with densely crowded, laciniate rows. The dorsal cirri have a black ring on the dilated subterminal part and

extend somewhat beyond the neuropodial fascicle; the ventral cirri are short, conical and hardly reach to the origin of the ventral fascicle.

12. ?*Lepidonotus squamatus* (L.).

LINNAEUS, Systema Naturae, 12th Edit., 1766, p. 1084.

Stat. 115. East side of Pajunga Island, Kwandang Bay (Celebes), Reef. 1 specimen.

A small worm, measuring 8 mm. in length and $3^1/_2$ mm. in breadth (with bristles), agrees with regard to the appearance of its scales and bristles very much with *Lepidon. squamatus*; unfortunately the head was withdrawn and therefore the situation of the eyes could not be observed. MARENZELLER[1]) and IZUKA[2]) also have mentioned this species from the coast of Japan and it was found on the Pacific coast of America by JOHNSON and TREADWELL[3]).

13. *Lepidonotus suluensis* n. sp. Pl. XVII, figs. 8 and 9.

Stat. 105. 6°8′ Lat. N., 121°19′ Long E. North off Sulu Island. Depth 275 M. 1 specimen.

At the above-named Station a worm was dredged, that undoubtedly is closely allied to *Lepidon. iphionoides* Mc Int.[4]), caught by the Challenger Expedition in Basilian Strait at a depth of 147 M.; however in my opinion it cannot be identified with it. Its length is about 12 mm., its breadth (with bristles) 6 mm. The head is shining like as porcelain. The eyes are indistinct, situated close near each other on its posterior half. The tentacle is absent. The lateral antennae have a slender basal joint, measuring two thirds of the length of the head; their distal part is tapering, with filiform tip, nearly as long as the palpi. In *Lepidon. iphionoides* the antennae (like as the dorsal cirri) have a marked enlargement, coloured by madder-brown pigment, beneath the tip; this is not visible in the Siboga-specimen. The palps are rather stout, with a short filiform tip; in *Lepidon. iphionoides* they are described as "densely papillose", though this is not represented in the figure. Our specimen has a conspicuous bifurcated nuchal collar, that does not occur in *Lepidon. iphionoides*. The ventral lobe of the parapodia is much more developed than the dorsal one and is provided with a projecting cylindrical extremity; its bristles (Pl. XVII, fig. 9) agree with those of *Lepidon. iphionoides* in having their subterminal dilated part furnished with rows, that bear long spinous teeth "almost feathery". However they are indistinctly bifid, with a rudimentary tooth beneath the tip, whereas those of *Lepidon. iphionoides* have a simple tip. The dorsal bristles have an acute tip and are provided with fine, indistinct rows. Whereas in *Lepidon. iphionoides* unfortunately all the scales were absent, they show in the Siboga-specimen a very characteristic feature, being slightly reniform, with a row of rigid, slender, cylindrical appendages along their exterior border (Pl. XVII, fig. 8). Their total surface is covered with papillae, larger ones near the external margin, smaller ones at the inner-side; the largest of them consist of a cylindrical shaft, with a crown of 4 or 5 triangular spines.

1) Südjap. Anneliden, III, 1902, p. 8.
2) Loc. cit., p. 12.
3) Polych. Annelids of the Pacific coast; Univers. of California publications, Zoology, Vol. 13 (1914) p. 175.
4) Loc. cit. p. 116, Pl. X, figs. 1, 2: Pl. Xa, figs. 1, 2.

14. *Lepidonotus* sp. Pl. XVII, figs. 10 and 11.

Stat. 99. 6°7'.5 Lat. N., 120°26' Long. E. Anchorage off North Ubian. Depth 16—23 M. 1 incomplete specimen.

A worm, broken in two fragments (anterior and posterior one), too incomplete for a satisfactory description and recognition. The head is elongate, with a pair of large eyes on each side in its posterior half; the lateral antennae and the tentacle are absent, the palps are stout, thrice as long as the head, with a filiform tip. The elytra (Pl. XVII, fig. 11) are large, whitish, overlapping each other in the median dorsal line; they are faintly reniform, areolate, with the scar of attachment situated somewhat eccentrically and with the border and surface smooth, except along the concave side, where a band of tubercles occurs. The parapodia have the ventral lobe much stronger developed than the dorsal one; the tip of the neuropodial bristles (Pl. XVII, fig. 10) is faintly curved, smooth without secondary process, whereas the subterminal dilated part is provided with half a dozen of laciniate fringes. The dorsal cirrus is nearly as long as the neuropodial fascicle; the ventral cirrus short, half as long as the ventral lobe.

In its habit it shows some resemblance with *Harmothoë pallida* Ehl.

Genus **Thormora** Baird [1]).

This genus differs from *Lepidonotus* by its notopodial fascicle, consisting of two kinds of setae: a ventral group of slender, smooth, capillary bristles with a sagittate distal end and a dorsal group of ordinary setae; the first ones are short in the anterior segments, very long in the posterior body-region.

In accordance with BAIRD and MARENZELLER I think it advisable to separate from *Lepidonotus* those species (*Thorm. Jukesii* Baird., *Lepid. trissochaetus* Gr. etc.) in which the notopodial bristle-fascicle contains two kinds of setae.

1. *Thormora trissochaeta* (Gr.).

GRUBE, Annulata Semperiana, p. 25, Pl. II, fig. 4.
WILLEY, loc. cit. p. 249.
POTTS, loc. cit. p. 331.

Stat. 99. 6°7'.5 Lat. N., 120°26' Long E. Anchorage off North Ubian, Sulu Archipelago. Depth 16—23 M. 3 specimens.
Stat. 231. Ambon Anchorage. Reef. 1 specimen.
Stat. 240. Banda Anchorage. Depth from 9—45 M. 1 young specimen in fragments.
Stat. 248. Anchorage off Rumah Lusi, Tiur Island. Reef. 2 specimens.
Stat. 315. Anchorage east of Sailus Besar, Paternoster Islands. Depth up to 36 M. 1 specimen.

This species is very variable of colour, as already stated by POTTS. In the specimen from Ambon the elytra have a dark green pigment, like in those from Tiur Island; the specimen from Banda has the elytra red-coloured, whereas spots of the same colour occur in the

1) Journal of the Proceed. of the Linnean Society, Zoology, Vol. VIII, 1865, p. 199.

median dorsal line in the intersegmental grooves. The specimens from North Ubian show purple spots. In the specimen from Ambon the head was withdrawn and concealed below a collar, so nothing could be said about the position of the eyes; in that from Banda and Sailus Besar however a single pair of large eyes is visible, not far from the anterior margin of the head, whereas the posterior pair of smaller ones is concealed below the lateral margin. The elytra bear along their border small keeled tubercles, that towards the centre acquire a conical shape, whereas some large spines occur around the scar of attachment. That *Thorm. trissochaeta* (Gr.) should be identical with *Th. Jukesii* Baird, as asserted by AUGENER [1]), I cannot accept, without having seen the typical specimens; for the elytra are described by GRUBE "margine laevi" and by BAIRD "ciliated on the external margin". This species shows a very wide geographical distribution, for it is mentioned by GRUBE from the Red Sea, Samoa, the Viti Isles and the Philippines, while it was met with by WILLEY in the neighbourhood of Ceylon, by POTTS in the Indian Ocean (Zanzibar, Saya de Malha banks etc.) and by MARENZELLER in the vicinity of Eno-sima.

Genus **Paralepidonotus** Horst.

HORST, Zool. Mededeel. R. Museum Nat. Historie, Leiden, vol. I, 1915, p. 8.

This new genus differs from *Lepidonotus* by a larger number of segments (38), by the presence of 15 pairs of elytra situated on segments 2, 4, 5, 7 .... 23, 26, 29 and 32 and a much stronger fascicle of notopodial setae.

As proved by GRAVIER *Polynoë ampullifera* Gr. [2]), *P. boholensis* Gr. [3]) as well as *P. pleiolepis* Mar. [4]) agree by the situation of their lateral antennae with *Lepidonotus* and it was a mistake of GRUBE to range the two first-named species in the group, "with submarginal tentacles" [5]); however they possess 15 in stead of 12 pairs of elytra and GRAVIER therefore proposed to divide the genus *Lepidonotus* in two sections. However in my opinion it is preferable to unite these species in a new genus, because they have also the notopodial fascicle much stronger developed than in *Lepidonotus*.

1. *Paralepidonotus ampulliferus* (Gr.).

GRUBE, Annul. Semperiana, p. 35, Pl. III, fig. 5.
GRAVIER, loc. cit. p. 214, Pl. VII, figs. 111—113, Pl. VIII, figs. 127 and 128.

Stat. 71. Makassar and surroundings. Depth up to 32 M. 1 incomplete specimen.

This species, characterised by the large, globular tubercles of its elytra, was first mentioned by GRUBE from the Philippines; afterwards it was met with in the Red Sea by

1) Die Fauna Südwest-Australiens Bd. IV, 1913, p. 107.
2) Annulata Semperiana, p. 35.
3) Annulata Semperiana, p. 41.
4) Südjapanische Anneliden, I, 1879, p. 6, Pl. I, fig. 4.
5) Loc. cit. p. 35 "Tentacula paria infra impar orientia"; probably FAUVEL by this statement was misled and placed them in the genus *Harmothoe* (loc. cit. p. 368).

JOUSSEAUME and COUTIÈRE and elaborately described by GRAVIER. FAUVEL found it among the Annelids, collected by BOGOYAWLENSKY in the Persian Gulf.

2. *Paralepidonotus boholensis* (Gr.). Pl. XVIII, figs. 1 and 2.

GRUBE, Annul. Semperiana, p. 41, Pl. III, fig. 4.
FAUVEL, Annél. Polychètes du Golfe Persique, 1911, p. 369.

Stat. 33. Bay of Pidjot, Lombok. Depth 22 M. and less. 1 specimen.
Stat. 49a. 8°23'.5 Lat. S., 119°4'.6 Long. E., Sapeh Strait. Depth 69 M. 1 incomplete specimen.
Stat. 138. Anchorage on the east coast of Kajoa Island. Depth 66 M. 1 specimen (without scales).
Stat. 162. West-coast of Salawatti. Depth 18 M. 2 incomplete specimens.
Stat. 164. 1°42'.5 Lat. S., 130°47'.5 Long E., South off Salawatti. 2 specimens.
Stat. 220. Anchorage off Pasir Pandjang, West coast of Binongka. Reef. 1 incomplete specimen.
Stat. 282. Anchorage between Nusa Besi and the N. E. point of Timor. Depth 27—54 M. 1 specimen in fragments.
Stat. 305. Solor Strait, off Kampong Menanga. Depth 113 M. 1 specimen.

This species was accurately described by GRUBE, though he had only a single specimen at his disposal; afterwards it was only met with by FAUVEL among the Annelids of the Persian Gulf.

The Siboga Expedition collected 4 complete and 4 incomplete specimens; the largest of them (Stat. 305) has a length of 24 mm. and consists of about 40 segments. The species can be easily recognised by its conspicuously coloured elytra, that issuing from the scar of attachment, are divided in four opposite areas, an exterior and interior one, dark, blackish, and an anterior and posterior area, pale, buff-coloured. The large anterior, pale area is densely beset with small tubercular papillae, which interiorly and posteriorly pass into large acute spines; moreover the interior and posterior margin is provided with a fringe of long, cylindrical papillae, with dilated tip, that anteriorly decrease in number and in length.

The dorsum of the segments shows an elongated transverse area, acuminate at both sides and bordered by a black and white line. Characteristical for the species is the semilunar lobe at the posterior ventral margin of each segment, at the median side of the nephridial papilla; it commences on the 4th segment, but it does not cease on the 27th one, as stated by GRUBE. The dorsal fascicle, like in the preceding species, consists of a large tuft of faintly bent bristles (Pl. XVIII, fig. 2) with a single tip; they are thicker than the ventral ones, and surrounded over the greatest part of their length by densely crowded laciniate fringes. The ventral bristles (Pl. XVIII, fig. 1) bear a fine pointed tooth below their tip, whereas the subterminal dilated part is provided with the usual alternating denticulated rows. In the dorsal part only of this fascicle there occur some slender bristles, with undivided tip, which over more than half their length are provided with denticulated rows.

Genus **Allmaniella** Mc. Intosh.

MC INTOSH, Challenger reports, Zoology, Vol. XII, 1885, p. 102,

This genus differs from *Paralepidonotus* especially by its large eyes and the long prolongations of its setigerous lobes.

The genus *Allmaniella* was based by Mc Intosh upon the anterior fragment of a minute worm, dredged by the Challenger Expedition off Setubal; without giving a special diagnosis, the author says: "it is characterised by its large eyes, peculiar shape of the head, and the remarquable structure of the ventral bristles, which show bifid points terminally, and then some distance beneath another distinct point inaugurates the spinous rows." Farther on he states: "the inferior setigerous lobe is produced into a long conical process, with the spine at the apex."

I have some doubt that this genus was based upon specimens in a stade of sexual maturity and belonging to *Paralepidonotus*.

1. *Allmaniella arafurensis* Horst[1]). Pl. XVIII, figs. 3—5.

Horst, Zool. Mededeel. R. Museum Nat. Historie, Leiden, vol. I, 1915, p. 9.

Stat. 262. 5° 53'.8 Lat. S., 132° 48'.8 Long E. Off Kei Islands. Depth 560 M. 1 specimen.

At the above-named Station a Polynoid was found, that with regard to the shape of its head and its large eyes much agrees with *Allmaniella setubalensis* Mc Int., dredged by the Challenger Expedition off Setubal in a depth of 470 fathoms. It has a length of 30 mm. and consists of 36 segments; on the dorsal side of each segment there occurs a transverse, oblong elliptical spot of brown colour preceded and succeeded by a linear one. The prostomium is transverse elliptical, with a conspicuous median longitudinal groove, from which the tentacle arises; only its basal part is present. The lateral antennae, that emerge from the anterior margin of the head, are also incomplete. Laterally on each side of the head there is a pair of large eyes, the anterior being larger than the posterior one. Of the palps only the left one is present; it measures about twice the breadth of the head and is smooth, tapering distally, with an acute tip. The tentacular cirri have been lost on both sides; only the basal part of this parapodium is present.

The specimen is devoid of scales, but probably there have been fifteen pairs of them, as commonly on the segments 2, 4, 5, 7 — 23, 26, 29 and 32; the dorsal cirri are also wanting. The cirrophores, laying nearly in the same line with the elytrophores, differ only by their smaller diameter; there are no dorsal tubercles. The ventral cirrus of the second parapodium (first elytrophore segment), as usually much longer than of the succeeding ones, reaches to the distal end of the bristle-fascicle; in the other segments the ventral cirrus emerges from the middle of the length of the neuropodium and extends somewhat beyond its distal extremity. The parapodia (Pl. XVIII, fig. 3) have both setigerous lobes prolongated in a long digitiform process, in which the distal end of the acicula lies enclosed. In *Allm. setubalensis*, according to Mc Intosh, only the ventral division of the foot has such a long conical process; but I suppose, that the dorsal process has been overlooked by him, as was first also done by myself in *Allm. arafurensis*, because it lies hidden between the large dorsal bristles. These bristles (Pl. XVIII, fig. 5) lie in a fan-shaped fascicle and are as usually faintly curved, broad with obtuse tips, longitudinal striae and numerous spinous rows in their distal half; there is an an-

1) Named after the Arafura Sea, in which it was found.

terior series of sword-like setae. Those of the ventral group (Pl. XVIII, fig. 4) are more slender, with an elongated subterminal dilatation, furnished with spinous rows and terminated by a bifid tip; they do not show the long smooth region below the tip, that according to Mc Intosh should be characteristic for *Allman. setubalensis*. However this character is also met with in the ventral setae of *Paralepidon. boholensis* and *P. ampulliferus*.

2. *Allmaniella ptycholepis* (Grube). Pl. XVIII, figs. 6—9.

Grube, Anneliden-fauna der Philippinen, p. 39, Pl. II, fig. 6.

Stat. 43. Anchorage off Pulu Sarassa, Postillon Islands. Depth up to 36 M. 1 female specimen.
Stat. 96. South-east side of Pearlbank, Sulu Archipelago. Depth 15 M. 2 specimens.
Stat. 299. 10° 52'.4 Lat. S., 123° 1'.1 Long. E., South coast of Rotti Island. Depth 34 M. 2 specimens.

At Station 43 a worm, broken in three fragments, and at Stations 299 and 96 two specimens were caught, that certainly must be identified with *Polynoë ptycholepis* Gr., on account of the characteristic feature of the papillae on its elytra; considering the structure of the parapodia and the large eyes, I think it must be ranged in the genus *Allmaniella*.

The length of the specimen of Stat. 43 is about 35 mm., the number of its segments amounts to fifty.

The head and dorsum are elegantly marbled with brown, whereas a transverse white band occurs on the middle of each segment preceded and succeeded by a white dotted line. The head (Pl. XVIII, fig. 6), more broad as long, shows on each side two large eyes, situated laterally; its posterior margin lies hidden under a large semilunar collar. From the middle of its dorsum the tentacle arises with a thick basal part, that bears a slender filiform distal joint, nearly as long as the breadth of the head. Next to the tentacle from the median frontal border[1]) the two lateral antennae arise, that are not quite so long as the unpaired one; they also consist of a thick basal joint and a slender filiform distal part, faintly dilated below the filiform tip. Both tentacular cirri are nearly of the same length; they also have a filiform tip and a distal dilatation. The palps are rather large, smooth, dilated in their basal part with a slender distal end, twice as long as the lateral antennae.

There are 15 to 17 pairs of elytra, not overlapping each other in the median dorsal line and leaving the posterior part of the body uncovered. In one specimen from Stat. 299 there is only one cirrus-bearing segment between the 15th and 16th elytron in stead of two. Each elytron is translucent, rounded quadrangular, with its scar of attachment somewhat eccentrical and the lateral area of its surface covered with small, three-spined papillae. Tubercula dorsalia are present. The parapodia (Pl. XVIII, fig. 7) have the ventral lobe much more developed than the dorsal one, the anterior lip of the first-named being elongated, pointed, enclosing the acicula: "pharetra ventralis longior, in apicem producta" according to Grube; its bristles (Pl. XVIII, fig. 9) are slender, with the distal part lanceolate, faintly serrated, the superior ones indistinctly bifid, the inferior ones with a distinct spur beneath the tip.

1) When Grube ranges this worm among the species, whose lateral antennae arise from under the frontal margin, I think this must be a mistake.

The setae of the notopodial fascicle (Pl. XVIII, fig. 8) are sword-shaped, finely serrated, with an undivided tip; its acicula also lies enclosed in a filiform prolongation. The dorsal cirrus is very long, extending beyond the extremity of the neuropodial fascicle, and is dilated beneath its filiform tip; the ventral cirrus does not reach beyond the neuropodial lobe.

3. ? *Allmaniella* sp. Pl. XVIII, figs. 10—12.

Stat. 240. Banda Anchorage. Depth from 9—45 M. 1 male specimen.

At the above-named Station (presumably pelagically) a small Polynoid-worm in a stade of sexual maturity was found, that on account of the structure of its parapodial lobes is to be ranged among the genus *Allmaniella*. It has a length of about 12 mm. and the number of its segments amounts to 33. Unfortunately all the scales (15 pairs in number) have been lost. The head is dotted with brown spots and also each segment has on its dorsum a transverse brown band, divided into two by a narrow white line. The head, that is much broader than long, bears on the middle of its frontal margin the basal joints of the lateral antennae; their distal part is twice as long as the head and terminates in a filiform tip. From the middle of its dorsum the tentacle arises, which is nearly as long as the lateral antennae. Two large eyes are situated on the lateral sides of the head. The parapodia (Pl. XVIII, fig. 10) have the anterior lip of the ventral lobe produced in a long conical process, inclosing the acicula. All the bristles have a vitreous appearance, only the aciculae are pale yellow. The neuropodial setae (Pl. XIII, fig. 11) have the subterminal dilated part provided with faintly denticulated rows and a bifid tip. The notopodium is feebly developed and provided with a short cylindrical lobe, surrounding the tip of the acicula; its bristles (Pl. XVIII, fig. 12) are nearly straight, faintly denticulated. The dorsal cirrus is long, extending beyond the distal extremity of the neuropodial fascicle; the ventral one however does not reach beyond the tip of the foot.

Genus **Halosydna** Kinberg [1]).

Body elongated with 18—21 pairs of elytra, situated on segment 2, 4, 5, 7, 9 . . . 23, 25, 27, 29, 31, 33 and 35; notopodial fascicle rudimentary.

1. *Halosydna fulvovittata* (Gr.).
(*Polynoë platycirrus* Mc Int.).

GRUBE, Annul. Semperiana, p. 33, Pl. III, fig. 1.
MARENZELLER, Südjapanische Anneliden, III, p. 7.
MC INTOSH, Challenger Annelida, p. 111, Pl. III, fig. 4 etc.
POTTS, loc. cit., p. 336, Pl. XVIII, fig. 8; Pl. XX, fig. 28.

Stat. 51. Madura Bay, Molo Strait. Depth from 69 to 91 M. 1 specimen.
Stat. 164. 1°42'.5 Lat. S., 130°47'.5 Long. E., South off Salawatti. Depth 32 M. 4 specimens.
Stat. 273. Anchorage off Pulu Jedan, East coast of Aru Islands. Depth 13 M. 2 specimens.
Aru Islands, East coast. VAN KAMPEN, 1907, 1 specimen.
Malacca Strait, VAN KAMPEN. 2 specimens.

1) Annulata p. 15.

This species strikes the eye by the striped appearance of its oblong elytra, that are furnished with 4 or 5 longitudinal dark stripes, in a somewhat oblique direction from the inner to the outer margin. POTTS however mentions a specimen from Minikoi, in which the posterior elytra were more uniformly pigmented. Moreover the elytra show in their posterior half, in the vicinity of the scar of attachment, a couple of keels, having the same direction as the above-named stripes. GRUBE and MARENZELLER mention only a single keel and some specimens appear to want both of them, for POTTS found, that in a specimen from Diego Garcia no trace of these structures was present and MC INTOSH also does not mention them. Along the anterior and interior margin of each elytron there occurs a band of small refringent bodies, also figured by MC INTOSH and POTTS, though not mentioned by them; MARENZELLER calls them "sehr niedere Papillen", a name, which however in my opinion does not suit them, because they do not extend above the surface of the elytron, but lie embedded in a dish-like cavity of the cuticula. Usually they have the appearance of small oval buttons, with a canal in the centre. The number of elytra amounts to 22 or 23 pairs; like POTTS' specimen from Minikoi, our specimen from Aru Island has 22 pairs of scales, whereas MARENZELLER mentions 23 pairs. In the notopodium besides the aciculum I observed only one or two short setae, with undivided tip and several transverse ridges beneath it; also MC INTOSH and MARENZELLER found a few of them, whereas the specimens, examined by GRUBE and POTTS, did not show any.

In the Siboga-specimens the palpi are enormously long, tapering distally and extending somewhat beyond the tentacle, that is dilated beneath its terminal filiform process; the paired antennae are not quite so long as the last one. GRUBE also says: "impar paribus paulo longius"; however MC INTOSH asserts, that the tentacle should be longer than the palpi and the antennae should have nearly the same length as these. MARENZELLER also found the antennae longer than the palpi; he adds however: "dieser Fall beweist wieder, wie niedrig, ceteris paribus, Angaben über die Grössenverhältnisse der Anhänge des Kopflappens taxiert werden müssen." I quite agree with MARENZELLER in considering *Polynoë platycirrus* Mc Int. to be identical with *Polynoë fulvovittata* Gr., for, though GRUBE has overlooked the large flattened dorsal cirri, MC INTOSH himself already recognised the great agreement of the Challenger-worms with those from the Philippines.

2. *Halosydna pilosa* n. sp. Pl. XIX, figs. 1 and 2.

Malacca Strait, 5°8′ Lat. N., 100°11′ Long. E. Depth 19.8 M. VAN KAMPEN. 17 Juni 1908.

In Malacca Strait by Dr. VAN KAMPEN a small *Lepidonotide* was dredged, that could not be identified with any species hitherto described from the Indian Waters and probably must be ranged among the genus *Halosydna*. Its body consists of about 40 segments and bears 17 pairs of scales, overlapping each other in the median dorsal line. They (Pl. XIX, fig. 1) are marbled with black and have a black spot on the scar of attachment, the latter being situated nearly in the centre. Their shape is auriculate and in their general appearance they much resemble the elytra of *Gattyana cirrosa*, as the posterior and exterior part of their margin is beset with a row of slender, filiform appendages; laterally these cilia alternate with short

papillae, provided with a distal knob, as also occur on the surface of the elytra. Besides their surface is covered with small papillae, that in the posterior part of the elytron acquire a keeled appearance. The head is somewhat longer than broad, rounded rectangular, divided in two halfs by a shallow groove; it bears the two pairs of indistinct eyes on the lateral border of its posterior part. Of the antennae the median one (tentacle) is very long, surpassing the lateral ones with a third of their length; it has a filiform tip and is dilated beneath it. The lateral antennae are also filiform distally, somewhat longer than the palps. All antennae are beset with papillae and their basal joints are mottled with black. The palps likewise are papilliferous, with an abruptly filiform tip. The parapodia are provided with slender papillae; their neuropodial fascicle (Pl. XIX, fig. 2) consists of stout, dark yellow bristles with a simple hooked tip and only two or three spines on each side. The notopodial fascicle contains some slender, filiform setae, serrated along their edge. The dorsal cirrus is very long, extending with its slender tip to the extremity of the neuropodial fascicle; the ventral one however is rather short and hardly reaches the base of the fascicle.

3. *Halosydna batheia* n. sp. Pl. XIX, figs. 3—5.

Stat. 52. 9° 3'.4 Lat. S., 119° 56'.7 Long. E., North off Sumba Island. Depth 959 M. 2 specimens.

In the depth of Savu Sea two specimens were dredged, a smaller and a larger one; the last one was met with by my colleague Mr. CAULLERY in a large oozy tube.

It has a length of nearly 15 mm. and consists of about 48 segments. The head is rounded, somewhat broader than long, divided by a shallow median groove in two halves; no eyes are visible. The tentacle is long and slender, tapering distally; it measures about four times the length of the head. The lateral antennae are present in the smaller specimen only and are nearly twice as long the head. The palps, nearly as long as the tentacle, have an abruptly filiform tip. There are 20 pairs of scales, leaving the middle of the dorsum uncovered; each elytron (Pl. XIX, fig. 3) is oval, translucent, granular, smooth, with the scar of attachment situated somewhat eccentrically, whereas several ramifying nerve-stems are emerging from it. The parapodium (Pl. XIX, fig. 4) consists of a reduced, papilliform notopodium, only containing the acicula, and a large, elongated triangular neuropodium; its anterior lip is obtuse, oval, shorter than the posterior one, that is pointed, papilliform. These lips consist of a loose, translucent tissue, composed of large cells, that also occur in the basal part of the dorsal cirrus.

The neuropodial bristles (Pl. XIX, fig. 5) have the distal end dilated, with a bifid tip and a dozen of laciniated lamellae; however in the dorsal part of the fascicle the setae are longer, more slender and hardly dilated distally. The dorsal cirrus is long, extending to the distal extremity of the neuropodial fascicle; the ventral one, hardly measuring a third of its length, is enlarged in its basal part and has a filiform tip. FAUVEL[1]) described a *Pseudohalosydna rosea* from the depths of the Atlantic (1213 M.) differing from *Halosydna* by the shape of its bristles as well as by the arrangement of its elytra.

1) Annélides Polychètes non pélagiques de l'Hirondelle et de la Princesse Alice, 1914, p. 37, Pl. I, fig. 13; Pl. II, figs 1—8.

Genus **Parahalosydna** Horst.

HORST, Zoolog. Mededeel. R. Museum Nat. Historie. Leiden, Vol. I, 1915, p. 10.

Characterised by the presence of only 15 pairs of elytra, on segments 2, 4, 5, 7, 9... 23, 26, 28 and 30, covering the whole dorsum; notopodial fascicle rudimentary.

1. *Parahalosydna sibogae* Horst. Pl. XIX, figs. 6 and 7.

HORST, Zool. Mededeel. R. Museum Nat. Historie, Leiden, vol. I, 1915, p. 11.

Stat. 105. 6°.8′ Lat. N., 121° 19′ Long. E. North off Sulu Island. Depth 275 M. 1 specimen.

At this Station a small Polynoid-worm was captured, that with regard to the structure of its head and the rudimentary feature of its notopodia fully agrees with *Halosydna*, but only possesses 15 pairs of elytra. The specimen is colourless and has a length of 12 mm.; the number of its segments amounts to 34. The prostomium (Pl. XIX, fig. 6) is elongated, longer than broad, faintly notched in the middle of its lateral sides; it is provided on each side with a pair of large eyes, situated next to each other, in front of the posterior margin of the head. The tentacle (unpaired antenna) arises with its basal part from the middle of the head; it has a filiform tip and it is smooth and about a third longer than the lateral antennae. These arise from the lateral frontal corners of the head with a rather long, thick basal part and have a filiform distal joint, that is twice and a half as long. The palps are very short, conical and smooth. The first segment bears two tentacular cirri, tapering distally, the ventral of which is somewhat longer than the dorsal one.

There are 15 pairs of elytra, covering the whole dorsum and overlapping each other in the median dorsal line, situated on segments 2, 4, 5, 7, 9.... 23, 26, 28 and 30; each elytron is faintly reniform, with a smooth surface except a group of small tubercles along its concave side. Its margin is without appendages and its scar of attachment lies eccentrically and is associated with a nerve-ganglion and numerous branching stems irradiating from it.

The parapodia (Pl. XIX, fig. 7) have only the neuropodial lobe well-developed; this has two oval lips and contains a fascicle of bristles, that have a smooth shaft and an enlarged, wedge-shaped distal part, the latter being faintly bent and serrated along both edges. The notopodial lobe is rudimentary and besides the acicula contains only three small faintly serrated bristles. The ventral cirrus is enlarged in its basal part and hardly reaches the extremity of the foot; the dorsal cirrus however is very long, about four times the length of the bristle-fascicle. At first it was supposed, that this species perhaps might belong to the genus *Malmgrenia*, that according to MC INTOSH should have lateral tentacles springing from the front of the head as in *Lepidonotus* and fifteen pairs of elytra; however it is afterwards stated by GIARD and ST. JOSEPH, that this has been a mistake and that the species *Malmgr. castanea* and *andreapolis* do belong to the *Harmothoinae*, as sufficiently is demonstrated by the figures of MC INTOSH himself.

Neither can our species be ranged among the genus *Halosydna*, that according to

KINBERG's diagnosis, is characterised by an elongated body, with at least eighteen pairs of elytra "dorsum non omnino tegentia".

Genus **Gastrolepidia** Schmarda [1]).

The sternum of the segments provided with a foliaceous appendage on each side. More than 21 pairs of elytra, covering the whole dorsum; from the 23^{d} to the 35th segment the elytrophore-bearing segments alternate with two cirrophore-bearing ones, more posteriorly however the arrangement becomes irregular.

1. *Gastrolepidia clavigera* Schm.
(*G. amblyphyllus* Gr.)

SCHMARDA, Neue wirbellose Thiere, 1861, p. 159, Pl. XXXVI, fig. 315.
GRUBE, Annulata Semperiana, p. 46, Pl. III, fig. 7.
WILLEY, loc. cit. p. 253.
POTTS, loc. cit. p. 341.

Stat. 60. Haingsisi, Samau Island. Reef. 6 specimens.
Stat. 213. Saleyer Anchorage. Depth up to 36 M. 1 specimen.
Gaspar Strait. 3° 27′ Lat. S., 107° 51′ Long. E. P. N. VAN KAMPEN, Oct. 1907. 2 specimens.

In my opinion the prostomium more agrees with that of *Lepidonotus* than with that of *Harmothoë* as suggested by DARBOUX [2]), for the lateral antennae are inserted upon the frontal margin; however there occurs an annular constriction, that makes the insertion somewhat indistinct. The unpaired antenna is about of the same length as the paired ones; the palps also are provided with a terminal flagellum like the antennae and the dorsal cirri. WILLEY first stated, that behind the 23^{d} segment not all the elytrophores regularly alternate with two cirrophores, for he found the posterior elytra inserted upon segments 35, 36, 38, 39, 41, 43 and 45, and POTTS, who could examine several specimens from Zanzibar, says that he could confirm WILLEY's statement and that he found this distribution quite invariable. I regret that I cannot agree with his opinion, for I found in one specimen with 52 segments and 30 mm. in length, the elytra inserted upon segments 35, 36, 38, 39, 42, 44, 46 and 48, whereas in a smaller specimen with 44 segments and 20 mm. in length, they are situated on segments 35, 36, 39, 41 and 43. In the posterior part of another specimen, 19 mm. long, the elytra were distributed on segments 35, 36, 38, 39, 42, 43, 45, 46, 47, 51 and 54.

SCHMARDA already mentioned that the colour of this worm is very variable, but POTTS first observed, that this is due to its association as a commensal with holothurians, the colour of which it matches; when found on *Holothuria atra* (as the specimens from Haingsisi) its coloration is of a deep purple-black, with white spots upon the elytra and white tip of the dorsal cirri, but associated with light-coloured *Holothurians* (*Hol. maculata* a. o.) it undergoes a corresponding colour-change.

1) Neue wirbellose Thiere, 1861, p. 159, Pl. XXXVI, fig. 315.
2) Loc. cit. p. 105.

Two specimens (badly preserved and discoloured) were found by Dr. VAN KAMPEN in holes in the arm-pits of an Asteroid.

Genus **Lepidasthenia** Malmgren [1]).

Body elongate. Elytra numerous, minute, leaving the greater part of the dorsum uncovered, inserted upon segments 2, 4, 5, 7 .... 23, 26, 29 to the end. Notopodial fascicle absent or rudimentary; in the neuropodial fascicle sometimes the upper setae enlarged or slender.

1. *Lepidasthenia affinis* n. sp. Pl. XIX, fig. 8.

Stat. 33. Bay of Pidjot, Lombok. Depth 9 to 22 M. 2 specimens.

At this Station two specimens (a complete worm and an anterior body-fragment) were collected, that belong to a species undoubtedly closely allied to *Lepidasthenia elegans* (Gr.) [2]), with which they agree in the presence of one or two stout bristles with single apex and reduced spinous rows in the dorsal part of the neuropodial fascicle. Unfortunately we do not possess a sufficient figure of the bristles of this mediterranean species; only VON MARENZELLER figured some bristles of the immature worm (*Polynoë lamprophthalma*) [3]) and POTTS published a sketch of the parapodium of *Lepidasth. elegans* from Zanzibar [4]), considered by him as a southern form of the mediterranean species. A typical parapodium (f. i. the 13th) of the Siboga-worm contains four kinds of neuropodial setae (Pl. XIX, fig. 8): 1° the true *Lepidasthenia*-bristles with bifurcated tip and a row of striated lamellae on each side of the subterminal dilated part (fig. 8 *a*); 2° the inferior setae, distinguished from the first group by their slender appearance, the spiniferous part that is bent backward and the apex (above the spur) that is thickened and obtuse (fig. 8 *b*); 3° two stout dorsal bristles, larger than those of the first group, with a single apex (or minute spur) and reduced lamellae (fig. 8 *c*); 4° two slender setae, situated dorsally, faintly bent, with elongated spiniferous area and a tip, that is obtuse or hardly bifurcated (fig. 8 *d*). In the segments situated more posteriorly the upper slender bristles disappear and the two stout setae of the third group become larger and thicker, whereas the inferior of both acquires a dark brown colour. Anteriorly those stout bristles are visible in the vicinity of the 10th segment, whereas POTTS states regarding his *Lepidasth. elegans*: "anterior to the twenty-first segment the superiority of the uppermost setae is not distinctly marked posteriorly". The scales are roundish, without cilia on the margin, with a spot of black pigment on the scar of attachment, which is situated somewhat eccentrically; there are more than 40 pairs of them. They are not so small as in *Lepidasth. elegans* and do not decrease posteriorly; therefore they leave only a narrow part of the dorsum bare in the anterior body-region and in the posterior segments they somewhat overlap each other. VON MARENZELLER states that in an adult *Lepidasth. elegans*, broad 3.9 mm. (from the right to the left elytrophore), the elytron measured 0.75 to 0.80 in

1) Annulata Polychaeta Spetsbergiae etc. 1867, p. 15.
2) GRUBE, Actinien, Echinodermen und Würmer, 1840, p. 85.
3) Zur Kenntniss der Adriat. Anneliden, I; Sitzungsber. Acad. d. Wissensch. Wien, Math. Naturw. Classe, Vol. LXIX, 1874. Pl. I, fig. 1.
4) Loc. cit. Pl. 20, fig. 32.

diameter, whereas in a specimen of *Lepidasth. affinis*, broad 3 mm. (without bristles), the elytron measures $1^1/_2$ mm. in breadth. In the anterior segments the dorsal cirrus is very long, extending to the extremity of the bristle-fascicle; more posteriorly they become somewhat shorter. The antennae of our specimens are much shorter than those in *Lepidasth. elegans* from Zanzibar; they are nearly as long as the head, with filiform tip and dilated beneath it. The palps are only a trifle longer than the antennae, with an abruptly tapering tip. The eyes are indistinct, situated laterally. The body is marbled with blackish pigment, with several white transverse spots.

The complete specimen measures about 40 mm. in length; it has nearly 110 segments.

2. *Lepidasthenia microlepis* Potts. Pl. XIX, fig. 9.

Potts, loc. cit. p. 343, Pl. 19, fig. 17; Pl. 21, fig. 52.

Stat. 60. Haingsisi, Samau Island. Reef. 1 specimen.

Length 20 mm., breadth (with setae) $5^1/_2$ mm.; 45 segments, 19 pairs of elytra.

This species is characterised by the rudimentary feature of its elytra, only just capping the elytrophores, with exception of the first pair, that cover the head; they are edged with a chocolate pigment, that extends over their underside.

The dorsal cirri have a rather long, conical cirrophore, bearing a distal joint of nearly the same length. That the bifurcated type of setae is only to be found among the inferior setae of the 7th segment, as mentioned by Potts, could not be confirmed, for I saw already a bristle, having this character, in the dorsal part of the fascicle of the 6th segment. This species is first mentioned by Potts from the Maldives.

3. *Lepidasthenia sibogae* Horst. Pl. XVI, figs. 1—4.

Horst, Notes from the Leyden Museum, Vol. XXXV, 1912/13, p. 161.

Stat. 282. 8° 25′.2 Lat. S., 127° 18′.4 Long. E. Off the North East point of Timor. Depth 27—54 M. 1 specimen.

Stat. 306. 8° 27′ Lat. S., 122° 54′.5 Long. E. Lobetobi Strait. Depth 247 M. 1 incomplete specimen.

At the above-named Stations a Polynoid-worm was caught, that is characterised not only by the singular shape of its elytra, but also by the abnormal manner of their attachment. The specimen of Stat. 282 measures 32 mm. in length and consists of 67 segments; it is colourless, dorsally transversely folded, and has its greatest breadth in the anterior third of its length, whereas posteriorly it becomes gradually narrower. The posterior fragment from Stat. 306, consisting of 22 segments, is not quite colourless, but each of its segments shows on the dorsum two narrow, brown transverse bands, one behind the anterior margin and an other one in front of the posterior border. The head (Pl. XVI, fig. 1) is somewhat heart-shaped, having a deep incision in the middle of its frontal margin, from which the tentacle arises, whereas the paired antennae are inserted on its lateral corners; they are all smooth, with a faint subterminal dilatation and have about the same length viz. two thirds of the length of the palps.

The palps are large, tapering distally and covered with papillae. Two large eyes, situated next to each other, occur on the lateral sides of the head. Both tentacular cirri are nearly of the same length and extend as far as the palpi. The parapodia are very slender; in the posterior region their length is equal to the breadth of the body, in the anterior segments they measure two thirds of its breadth. There are 26 pairs of elytra (Pl. XVI, fig. 2), as in other *Lepidasthenia*-species situated on segments 2, 4, 5, 7, 9 . . . 23, 26, 29 . . . 65; they have the shape of greyish, minute, oval buds, smooth, not quite so high as broad and fixed at their median side to a long elytrophore, which is provided with annular grooves and does not reach beyond the distal end of the neuropodium. About the internal structure of these organs I could observe, that like in other elytra there is an epidermis-layer of polygonal cells, ending at their base in slender fibres, forming a dense network in the centre of the organ; the presence of a nerve could not be stated with certainty, but they contain a great number of dark, yellowish, glandular (?) cells. The dorsal cirri (Pl. XVI, fig. 3), also inserted upon long, annulated cirrophores, are rather short and do not exceed the elytra much in length except on the anterior segments. The notopodial fascicle is absent and only represented by the acicula; the neuropodial bristles are faintly curved in their distal part and show a short subterminal dilatation with a small number of transverse spinous rows. The inferior setae (Pl. XVI, fig. 4 *b*) of this fascicle have a simple undivided apex; however some of the dorsal ones (Pl. XVI, fig. 4 *a*) have a bifurcated tip, the main point being elongated in a long, slender, acute limb, whereas the other limb measures about a third of its length.

A remarquable species (*Lepidast. michaelseni*) was described by AUGENER from Cockburn Sound (Southwest-Australia), characterised by a papillate nuchal collar[1]).

4. *Lepidasthenia* sp. Pl. XIX, fig. 10.

Stat. 105. 6° 8′ Lat. N., 121° 19′ Long. E. North off Sulu Island. Depth 275 M. 1 specimen.

At the above-named Station the anterior fragment of a rather large worm was dredged, consisting of 38 segments; it is about 35 mm. long, whereas its breadth measures 9 mm. (with bristles). In my opinion the specimen cannot be identified with one of the described species, but on account of the fragmentary stade of the worm I hesitate to propose a new name for it. Its head much resembles that of *Lepidast. microlepis*; the antennae are rather short, nearly of the same length, the palps however are much stouter, more than twice as long as the median antenna. There are two pairs of small indistinct eyes. The scales, except the first pair of them that is large, are small, not entirely covering the parapodia; they are roundish, provided with some black spots and a black edge. In the neuropodial fascicle the uppermost setae (Pl. XIX, fig. 10) have an elongated, pointed tip, much longer than the spur, like as in *Lepidast. sibogae*; in the anterior segments the inferior setae also have a pointed tip, but without a spur. The dorsal cirrus, dotted with black, reaches as far as the edge of the parapodium; the ventral cirrus is much shorter, about a third of its length.

1) AUGENER, Polychaeta errantia: Die Fauna Südwest-Australiens, Bd. IV, 1913, p. 109, pl. II, figs. 15 and 16.

Genus **Weberia** Horst.

HORST, Zool. Mededeel. R. Museum Nat. Historie, Leiden, vol. I, 1915, p. 246.

Body short. Lateral frontal lobes of the prostomium prolonged into the basal joint of the antennae. Parapodia without ventral cirrus except in the 2d segment. Notopodial fascicle absent, neuropodial one consisting of hook-shaped bristles. Elytra presumably 18 pairs, situated on segments 2, 4, 5, 7, 9, 11, 13, 15, 17, 19, 21, 23, 24, 26, 27, 29, 30 and 32.

1. *Weberia pustulata* Horst. Pl. XIX, figs. 11 and 12.

Stat. 45. 7° 24′ Lat. S., 118° 15′.2 Long. E. South off Postillon Islands. Depth 794 M. 1 specimen.
Stat. 314. 7° 36′ Lat. S., 117° 30′.8 Long. E. South off Paternoster Islands. Depth 694 M. 2 specimens.

At the above-named Stations, in a considerable depth, three *Lepidonotinae* were dredged, differing in several characters from the species, hitherto described. Unfortunately they are somewhat incomplete, for the elytra as well as most cirri are absent. The specimen of Stat. 45, a female, measures nearly 20 mm. in length and has about 40 segments.

The head (Pl. XIX, fig. 11) is rounded, more broad than long, prolonged anteriorly in the two stout basal joints of the lateral antennae, which are nearly as long as the head; their distal part is only a trifle longer than the basal one, with an abruptly filiform tip. From the middle of the head a large basal joint of the tentacle arises, its distal part is broken off. The palps are stumpy, conical. No eyes are visible. The tentacular cirri lack their distal joint.

Each segment bears a papilliform tubercle in the middle of the dorsum; this series in combination with the longitudinal rows of dorsal tubercles, elytrophores, cirriphores and notopodia gives to the body a pustulate appearance. A distinct groove occurs in the middle of the ventral side.

The parapodia are characterised by the total absence of a ventral cirrus; this organ being only present in the first setigerous segment (the 2d). It consists of a rather stout basal part and a distal joint with filiform tip, hardly extending beyond the extremity of the neuropodium. Especially in the anterior body-region the parapodia do not ly in the same line, but show an alternate arrangement like in *Hermodice carunculata*.

Each parapodium (Pl. XIX, fig. 12) consists of a papilliform notopodium, only containing an acicula and a much larger neuropodium, that shows transverse folds at its ventral side. In the neuropodium the anterior lip is rounded, ellipsoidal, with an incision in the outer margin, whereas the smaller, posterior one is provided with several papillae. The neuropodial fascicle contains four yellow, hook-shaped setae, that are dilated below the curved apex, where they are provided with several indistinct, densely crowded, denticulated rows. Presumably there are 18 pairs of scales, situated on segments 2, 4, 5, 7, 9, 11, 13, 15, 17, 19, 21, 23, 24, 26, 27, 29, 30 and 32, but as none of them has been preserved, nothing can be said about them; the arrangement of the elytra thus differing from that in other *Lepidonotinae*, in which usually behind the 23d segment the elytrophore-bearing segments alternate with two cirriphore-bearing ones. Each

cirriphore, lying laterally from the series of elytrophores, is connected by a ridge with a dorsal tubercle.

II. Harmothoïnae.

Genus **Harmothoë** Kinberg [1]).

Body short, consisting of 35—37 segments. Scales 15 pairs, covering the whole dorsum, inserted upon segments 2, 4, 5, 7 ... 23, 26, 29 and 32. Antennae and cirri sometimes densely covered with cilia. Neuropodial bristles stouter than notopodial ones, with spinous distal region and simple or bifid tip.

1. *Harmothoë atra* Horst. Pl. XX, figs. 1 and 2.

HORST, Zool. Mededeel. R. Museum Nat. Historie, Leiden, vol. I, 1915, p. 13.

Stat. 19. 8°44'.5 Lat. S., 116°2'.5 Long E. Bay of Labuan Tring, Lombok. Depth 18—27 M. 1 specimen.

At this Station a worm was caught, broken in two fragments and consisting of 37 segments. The head (Pl. XX, fig. 2) is blackish, nearly as long as broad, divided in two halves by a conspicuous median groove; anteriorly it shows two blunt frontal peaks, that bear the large anterior eyes. The eyes of the posterior pair are smaller and lie hidden under a nuchal collar. The tentacle, nearly as long as the palpi, terminates in a filiform tip; the lateral antennae, measuring two thirds of the length of the tentacle, are provided with papillae and a filiform tip. The scales (Pl. XX, fig. 1) are blackish, roundish, slightly concave in front, with the scar of attachment situated eccentrically; their surface is covered with small tubercles, passing outward in conical spines, whereas slight oval papillae occur along the external border. On the dorsum of each segment there occurs a broad transverse band (sometimes divided in two) succeeded by a smaller one. The ventral branch of the parapodia terminates in a digitiform lobe, enclosing the tip of the acicula; its bristles are slender, with a smooth bifid tip and a subterminal dilated part with laciniate rows. The notopodium also terminates in a pointed process, enclosing the acicula; its bristles, of the usual appearance, are very slightly bent and are provided with a bare acute tip. The ventral cirrus, dilated in its distal part and tapering distally, is provided with papillae and does not extend to the distal extremity of the foot. The dorsal cirrus, also densely beset with papillae and dilated beneath the filiform tip, is not quite as long as the neuropodial fascicle.

2. ? *Harmothoë benthaliana* Mc. Int.

Mc INTOSH, Annelida Polychaeta of H. M. S. Challenger, p. 95, Pl. XIII, fig. 3, Pl. XX, fig. 7 and Pl. V A, figs. 9 and 10.

Stat. 297. 10°39' Lat. S., 123°40' Long E. South off Timor. Depth 520 M. 1 specimen.

1) Loc. cit., p. 386.

At this Station a badly preserved worm (without elytra) was dredged, that with regard to the structure of its feet and bristles much agrees with *Harm. benthaliana*, found by the Challenger Expedition near the coast of America, at a depth of 1240 fathoms. The ventral division of the parapodia is provided with a lobe and contains a fascicle of bifid bristles, the superior of which are rather slender with elongated spinous regions, whereas the dorsal division carries a tuft of boldly curved bristles with spinous rows and a peculiarly flattened tip, that has a knive-edge aspect on the convex side.

3. *Harmothoë dictyophora* Gr.

GRUBE, Annulata Semperiana, 1878, p. 44, Pl. XV, fig. 9.
WILLEY, Polychaeta of Ceylon, p. 251, Pl. I, figs. 14—16.
FAUVEL, Annélides du Golfe Persique, p. 370.
AUGENER, Die Fauna Südwest-Australiens: Polychaeta errantia. Bd. IV, 1913, p. 115.

Stat. 258. Tual Anchorage, Kei Islands. Depth 22 M. 1 specimen.
Stat. 310. 8°30′ Lat. S., 119°7′.5 Long E. East off Sumbawa. Depth 73 M. 1 incomplete specimen.

This species, easily recognised by the areolate structure and the bifid spines of its elytra, appears to be distributed over a very large area, as it was at first mentioned by GRUBE from the Philippines, by WILLEY from Ceylon and afterwards met with by FAUVEL in the Gulf of Persia, by MICHAELSEN and HARTMEYER in Sharks Bay (Südwest-Australia).

4. ? *Harmothoë kerguelensis* Mc Int.

MC INTOSH, Challenger Annelida Polychaeta, p. 97, Pl. VI, VIA and XIX.

Stat. 256. 5°26′.6 Lat. S., 132°32′.5 Long. E. North off Kei Islands. Depth 397 M. 1 specimen.

This specimen much agrees with *Evarne kerguelensis*, described by MC INTOSH from Kerguelen Island. It has 37 segments and measures about 10 mm. in length.

There are two pairs of conspicuous eyes, the anterior being situated on the lateral prominences of the head, the posterior on its posterior half. The tentacle is rather long, longer than the palpi and is provided with a filiform tip and densely covered with cilia. The scales are roundish, slightly concave in front; the outer and posterior part of their margin is provided with long cilia, whereas the inner and anterior part is smooth. Their surface is for the greater part covered with conical spines, towards the posterior border a few of them increasing to large, bluntly conical papillae. The ventral lobe of the parapodia is much more developed than the dorsal one, and provided with a rather long digitiform process; its bristles mostly have a slender smooth tip, without secondary tooth. The notopodial setae also have a rather acute, smooth tip.

5. *Harmothoë nigricans* Horst. Pl. XX, figs. 3 and 4.

HORST, Zool. Mededeel. R. Museum Nat. Historie, Leiden, vol. I, 1915, p. 14.

Stat. 213. Saleyer Anchorage. Depth up to 36 M. 1 specimen.

At the above-named Station a Polynoid-worm was dredged, that possesses only some of the anterior scales; it has a length of 12 mm. and consists of 38 segments, whereas the number of elytra amounts to 15. The head (Pl. XX, fig. 4) shows a median groove on the dorsum and from its anterior part a short tentacle arises with a stout basal part; its distal joint, not much longer than the basal one, is dilated in its inferior part and abruptly ends with a filiform tip. The lateral antennae are only somewhat longer, also terminating in a filiform tip. The palps are rather stout, tapering distally, with a filiform tip, darkly pigmented like the head, except a longitudinal pale stripe over their dorsal side. Indistinct eyes lie in front of the posterior margin of the head. The scales (Pl. XX, fig. 3) are reniform, their uncovered part being blackish and beset with rather large conical spines, whereas their posterior margin is fringed with rather long, cylindrical papillae; only on the covered part of each scale there are small tubercles. No dorsal tubercles are present. The parapodia have a long dorsal cirrus, furnished with rather long papillae and extending beyond the bristle-fascicle; the ventral cirrus is minute, smooth and does not reach the distal extremity of the foot. The notopodium has a rounded, ear-shaped edge; its anterior lip is short, straightly cut, whereas the posterior one is elongated, pointed. Its bristles are fringed up to a short distance from the tip, that is acutely pointed. The neuropodium has a triangular, elongated anterior lip, enclosing the acicula; its bristles are longer, bifid, with laciniated whorls on the dilated distal part.

The species appears to be allied to *Lagisca yokohamiensis*, but it does not show the rapid diminution of the body posteriorly, that occurs in the genus *Lagisca*; also as the last scale is situated on the 32^{d} segment, no great part of the body can have been uncovered.

6. *Harmothoë pallida* (Ehl.).
(*Gattyana pallida* Ehl.)

EHLERS, Die Bodensässige Anneliden der deutschen Tiefsee Expedition, 1912, p. 49, Pl. I, figs. 1—9.

Stat. 65^{a}. Off Tanah Djampeah. Depth from 400 M. 1 specimen.

At the above-named Station a small worm was dredged, that must be identified with *Gattyana pallida*, specimens of which were captured by the Deutsche Tiefsee Expedition south off Pulu Nias, at the depth of 616 M. It measures 21 mm. in length and has 37 segments. The species is characterised by its reniform elytra, that have the scar of attachment situated near their concave margin; the Siboga-specimen possesses 15 pairs of elytra, whereas EHLERS mentions 16 pairs. The elytra show an areolate structure, especially in the vicinity of the margin; these cavities are covered by the thin epidermis-layer only and are distinctly visible through this layer. The blunt tubercles on the upper surface of the elytron have a small round cavity; the filiform papillae of the margin are dilated distally.

7. *Harmothoë* sp. Pl. XX, figs. 7 and 8.

Stat. 164. 1° 42'.5 Lat. S., 130° 47'.5 Long E. South off Salawatti Island. Depth 32 M. 1 specimen.

An anterior fragment of a female worm, consisting of 13 segments, without elytra; its

antennae and cirri are densely covered with long cilia. The head (Pl. XX, fig. 7) is somewhat more broad than long, divided by a median groove in two halves, each terminating anteriorly in a conspicuous frontal peak. There are two pairs of large eyes; the anterior one situated on the lateral prominence of the head (not below the frontal peak as in *Gatt. cirrosa* Pall.), the other pair placed on its posterior part. The tentacle arises with a short dark-tinged basal part from the triangular notch of the head; its distal joint, twice and a half as long as the head, with a smooth filiform tip, is densely covered with long cilia, that are slightly clavated distally. The lateral antennae, not quite half as long as the tentacle, also terminate with a bare filiform tip and are densely covered with cilia. The palps, only somewhat longer than the lateral antennae, have an enlarged base and are tapering distally; they are covered with small papillae. The tentacular cirri have nearly the same length and appearance as the tentacle. The nuchal collar has a papilla in the centre. In the parapodia the neuropodial branch is provided with a rather long cylindrical lobe; its bristles (Pl. XX, fig. 8), not much longer than the notopodial ones, have a short dilated subterminal part and a short acute secondary process below the tip. A large notopodial fascicle contains bristles of the usual shape, with a smooth, acute tip and laciniated fringes over their total length. The dorsal cirri are nearly as long as the neuropodial fascicle, densely covered with cilia; the ventral cirri are short and do not reach the distal extremity of the feet.

8. ? *Harmothoë imbricata* (L.). Pl. XX, figs. 5 and 6.

Macassar, PILLER.

In the collections of the Leiden Museum I found a *Harmothoid*-worm, collected by Mr. PILLER in the neighbourhood of Macassar. Unfortunately it is in an indifferent state of preservation and therefore it is difficult to say, wether it belongs to a known species. Only a single elytron (Pl. XX, fig. 5) is left, that much resembles those of *Harmoth. imbricata*; it is ellipsoidal, with the scar of attachment situated somewhat eccentrically, nearest to the posterior border. The whole surface of the scale is beset with small tubercles, that in its anterior region are very low, but posteriorly become gradually longer and attain a blunt, conical shape; its margin is smooth, only at the posterior border there occur six large, clavate papillae. In the parapodia the neuropodium is nearly cylindrical and much surpasses the short notopodium in length; both are provided with a digitiform process, surrounding the distal end of the acicula. The neuropodial bristles are indistinctly bifurcated at the apex and are provided with several laciniated rows along the subterminal, dilated part; the notopodial setae have the usual shape. The ventral cirrus is half as long as the neuropodial lobe; the dorsal cirrus with its filiform tip reaches the extremity of the neuropodial fascicle. The head is provided with two acute frontal peaks; eyes could not be recognised. The tentacle is at least twice as long as the lateral antennae. *Harmothoë imbricata* is already mentioned from the coast of Japan by von MARENZELLER[1]) and IZUKA[2]).

1) Südjapan. Anneliden, I, p. 9.
2) Loc. cit. p. 43, Pl. V, figs. 1–4, Pl. VI, fig. 1.

9. *Harmothoë* sp.

Stat. 35. 8° 0′.3 Lat. S., 116° 59′ Long E. Bali Sea. Depth 1310 M. 1 specimen.

A small worm, $6^1/_2$ mm. long, lacking so many of the appendages of the body that no satisfactory description can be given. Its head is nearly round, with faint frontal peaks and a broad median dorsal groove, from which the base of the tentacle emerges. No eyes are visible. A pair of rather stout palpi is present, abruptly terminating in a filiform tip. There occur 13 pairs of elytrophores, but the posterior segments are wanting. The notopodial fascicle consists of stout bristles of the usual appearance, slightly bent; the neuropodial setae are slender with a simple, slightly curved tip, the dorsal ones more spinous. A long pointed acicula emerges from the translucent distal lobe of the neuropodium.

10 *Harmothoë* sp.

Stat. 49ª. 8° 23′.5 Lat. S., 119° 4′.6 Long. E. Sapeh Strait. Depth 69 M. 1 specimen.

An anterior fragment of a worm, long 5 mm., with 20 segments; it wants the elytra as well as the cirri and is too incomplete for a satisfactory description or for identification.

11. *Harmothoë* sp.

Stat. 122. 1° 58′.5 Lat. N., 125° 0′.5 Long. E. Celebes Sea. Depth 1264—1165 M. 1 specimen.

A small worm, 6 mm. long, without scales and cirri, too incomplete for a satisfactory description or for identification.

12. *Harmothoë* sp.

Stat. 177. 2° 24′.5 Lat. S., 129° 38′.5 Long. E. Ceram Sea. Depth 1633 M. 1 specimen.

A worm, with distinct frontal peaks and two pairs of large eyes, but without scales and cirri, too incomplete for a satisfactory description or for identification.

13. *Harmothoë* sp.

Stat. 251. 5° 28′.4 Lat. S., 132° 0′.2 Long. E. South of Kur Island. Depth 204 M. 1 specimen.

A female specimen with two pairs of large eyes, without elytra and cirri, too incomplete for a satisfactory description or for identification.

14. *Harmothoë* sp.

Stat. 184. Anchorage off Kampong Kelang, South coast of Manipa Island. Depth 36 M. 1 specimen.

A small worm, 8 mm. long, with 35 segments, without scales, too incomplete for a satisfactory description or for identification.

Genus **Lagisca** Malmgren [1]).

This genus differs from *Harmothoë* especially by a greater number of segments, 40 or more. There are 15 pairs of scales; the posterior segments of the body are uncovered.

1. *Lagisca cornuta* Potts.

Potts, loc. cit., p. 339, Pl. XIX, fig. 14; Pl. XXI, fig. 48.

? Stat. 96. Sulu Archipelago. Depth 15 M. 2 young specimens.
Stat. 100. 6° 11′ Lat. N., 120° 37′.5 Long E. Sulu Sea. Depth 450 M. 1 incomplete specimen.
Stat. 139. 0° 11′ Lat. S., 127° 25′ Long. E. North off Batjan. Depth 397 M. 2 specimens.
Stat. 173. 3° 27′.0 Lat. S., 131° 0′.5 Long. E. Off East coast of Ceram. Depth 567 M. 2 specimens.
Stat. 262. 5° 53′.8 Lat. S., 132° 48′.8 Long. E. West off Great Kei Island. Depth 560 M. 2 specimens.
Stat. 266. 5° 56′.5 Lat. S., 132° 47′.7 Long. E. Off Kei Islands. Depth 595 M. 4 specimens.

At the above-named Stations specimens of a *Lagisca* were collected, that must be identified with *Lag. cornuta*, described by Potts from Salomon Island [2]). The species is distinguished from the closely allied *Lag. flaccida* Potts and *Lag. crosetensis* Mc Intosh [3]) by its short lateral antennae, that have their basal portion dilated. In the specimens of the Siboga, like in that of Potts, the tentacle is wanting. Both pairs of eyes are large and in our specimens, the posterior pair of them is much larger than it is indicated in figure 14 of Potts. The small specimen of Stat. 273 only possesses some elytra and these much agree with the scales of *Lag. crosetensis*; their surface is covered with spines, commencing anteriorly as minute tubercles, and having their posterior and outer border fringed with cilia. In the parapodia the dorsal cirrus is long and slender, not dilated below the tip; the ventral cirrus hardly extends beyond the base of the neuropodial fascicle. The dorsal as well as the ventral branch of the foot has a digitiform process, in which the acicula is enclosed; the first-named branch is somewhat shorter than the last one. The ventral margin of the neuropodium is densely beset with glandular tubes. The dorsal fascicle consists of a fan-like tuft of stout, slightly bent setae, with serrated fringes up to the tip and some of the bristles have a faintly bifurcate apex. The ventral setae are more slender and straighter, with several rows of spines in their dilated part and an acute incurved tip, with a long slender spine under it.

2. *Lagisca flaccida* Potts.

Potts, loc. cit. p. 339, Pl. XVIII, fig. 11, Pl. XXI, figs. 49 and 50.

Stat. 305. Solor Strait. Depth 113 M. 1 specimen.

A worm from the above-named Station must, in my opinion, be identified with *Lag. flaccida* Potts from Zanzibar, which is especially characterised by the feature of its elytra. Its

1) Nordiska Hafs-annulater, p. 65.

2) In *Lag. indica* Potts, according to Potts' description and figure, the lateral tentacles are prolongations of the frontal border of the head, instead of being inserted beneath it; therefore I presume, that it does not at all belong to the genus *Lagisca*.

3) Challenger Annelida, p. 88.

length is 18 mm., the number of segments 40. However some of POTTS' statements could not be confirmed, f. i. he mentions "small distinct eyes", whereas in our specimen the eyes are rather large. The elytra are transparent, with an opaque ring around the scar of attachment and the outer half (inner according to POTTS) of the surface is covered with small cylindrical tubercles, whereas upon the inner half there is a group of mammiform eminences, lying parallel to the margin.

3. *Lagisca Pottsi* Horst.
(*Polynoë longicirrus* Potts).

POTTS, Polychaeta of the Indian Ocean, p. 336, Pl. XVIII, fig. 9, Pl. XX, fig. 29, Pl. XXI, figs. 37 and 38.

Stat. 51. Molo Strait. Depth from 69 to 91 M. 2 specimens.
Stat. 164. 1°42'.5 Lat. S., 130°47'.5 Long. E. South off Salawatti Island. Depth 32 M. 1 specimen.

At the first-named Station a badly preserved specimen of this species and the anterior fragment of another one was dredged. It is characterised by its long dorsal cirri as well as by the peculiar shape of its inferior neuropodial bristles, that have a hook-shaped extremity with faintly developed laciniate fringes.

POTTS appears to have overlooked that the name of *Polynoë longicirra* was already given by SCHMARDA in 1861 to an other worm from Ceylon[1]), that according to MARENZELLER must be ranged among *Scalisetosus*; therefore I propose to call the species, described by him from the Maldives, and that presumably belongs to the genus *Lagisca*, *Lagisca Pottsi*.

4. *Lagisca elytrophora* Horst. Pl. XX, figs. 9—11.

HORST, Zool. Mededeel. R. Museum Nat. Historie, Leiden, vol. I, 1915, p. 15.

Stat. 273. Anchorage off Pulu Jedan (Aru Islands). Depth 13 M. 1 specimen.

At this Station a *Lagisca*-species was caught, that cannot be identified with one of the known species of this genus; it is a female with eggs, that has a length of about 13 mm. and consists of 45 segments. It is characterised by its large elytra, not only overlapping each other in the middle of the dorsum, but also covering entirely the parapodia. The head shows a conspicuous median dorsal groove, from which the basal part of the tentacle arises; its distal joint is slender, pointed, nearly as long as the head. The lateral antennae are short, as long as half the breadth of the head. The palpi are stout, with a filiform distal part longer than the tentacle. Of the tentacular cirri the dorsal one is the longer, not quite as long as the palpi. No eyes are visible. There are 15 pairs of elytra, considerably overlapping each other; they (Pl. XX, fig. 9) are large, reniform, with the scar of attachment nearly in the centre and numerous ramified nervous stems radiating from it. Their surface is bare, except the region behind the concave border, that is covered with small tubercles; their margin is smooth. Dorsal tubercles

1) SCHMARDA, Neue Wirbellose Thiere, Bd. 1, p. 152, pl. XXXVI, fig. 309.
2) MARENZELLER, Südjapanische Anneliden, III, 1902, p. 12.

present. The parapodia (Pl. XX, fig. 10) have the neuropodium strongly developed, triangular; its fascicle consists of a dorsal part, with slender setae, hardly dilated and finely serrated, while its ventral part contains stouter bristles (Pl. XX, fig. 11), with simple curved tip and obsolete fringes along the dilated distal part. The notopodium has a short, pointed anterior lip, enclosing the acicula; its fascicle consists of slightly curved setae, which are smooth or faintly serrated. The dorsal cirrus is rather long, tapering, extending beyond the distal extremity of fascicle; the ventral one is much shorter, reaching hardly beyond half the length of the neuropodium.

5. *Lagisca malayana* Horst. Pl. XX, figs. 12 and 13.

HORST, Zool. Mededeel. R. Museum Nat. Historie, Leiden, vol. I, 1915, p. 16.

Stat. 273. Anchorage off Pulu Jedan (Aru Islands). Depth 13 M. 2 specimens.

Two female specimens, that lost their elytra and almost all their cirri; the largest one has about 40 segments and measures 17 mm. in length. It is characterised by a peculiar coloration on its dorsum, the blackish median area being divided by some longitudinal and transversal pale lines in a number of regular compartments, lying in three transverse rows (Pl. XX, fig. 13). Head more broad than long, divided by a median groove in two halves, with two pairs of large eyes; the posterior pair is situated in front of the posterior border, whereas the eyes of the anterior pair ly on the lateral prominences. The tentacle is absent. The lateral antennae are slender, densely beset with long cylindrical papillae and measure about two thirds of the length of the palpi. The palpi are stout in their basal part, with filiform tip and are also beset with short papillae. In the parapodia (Pl. XX, fig. 12) both lobes are nearly equal in length; their ventral lobe is rounded triangular, with a short curved appendix. The ventral setae are of the usual shape and have a bifid tip and a dilated distal part, with laciniate fringes. The dorsal lobe is cylindrical with digitiform tip, enclosing the acicula; its bristles are slightly curved, with a smooth distal extremity and conspicuous dentate rows below it. Dorsal tubercles large. The ventral cirrus, tapering distally, is provided with some long cylindrical papillae, and does not reach much beyond half the length of the ventral lobe; the dorsal cirrus, densely beset with cylindrical papillae, and provided with a filiform tip, does not extend beyond the distal extremity of the notopodial fascicle.

6. ? *Lagisca indica* Potts.

POTTS, loc. cit., p. 338, Pl. XIX, fig. 13; Pl. XXI, figs. 46 and 47.

Stat. 313. Saleh Bay (Sumbawa). Depth up to 36 M. 1 incomplete specimen.

At this Station the anterior fragment of a worm was captured, 5 mm. long and consisting of 14 segments, that wants the elytra as well as the dorsal cirri; therefore it could not be identified with certainty. The head is roundish rectangular, more broad than long, with rounded frontal lobes, dotted with black; no frontal peaks could be discerned and the lateral antennae have the appearance of prolongations of the head, as described and figured by POTTS for *Lagisca*

indica. The antennae have a stout basal part and a slender distal joint, nearly as long as the head; the tentacle is only represented by its basal joint, arising from the anterior part of the median dorsal groove. The palps are stout, ciliary, tapering distally, thrice as long as the head. There occur two pairs of large eyes; the anterior pair is situated in the middle of the lateral side of the head, the posterior pair lies in front of its posterior margin.

According to POTTS the species is a widely distributed form in the Indian ocean, allied to *Lagisca crozetensis* Mc Intosh.

7. *Lagisca (Polynoë) minuta* Potts.

POTTS, loc. cit. p. 337, Pl. XIX, XX and XXI, figs. 12, 31, 42 and 43.

Stat. 99. 6°7'.5 Lat. N., 120°26' Long. E. Anchorage off North Ubian. Depth 16—23 M. 1 specimen.

A small, badly preserved worm, that certainly must be identified with the above-named species from the Maldives. The body, tapering posteriorly, has a length of 6 mm. and consists of 38 segments; it is a female, which unfortunately lacks all the elytra as well as most of the dorsal cirri. The species is characterised by the great difference in length and appearance of the ventral and the dorsal bristles of the neuropodial fascicle; the dorsal setae have a slender, elongated, serrated, distal region, whereas in the ventral ones this region is short and swollen. In the basal part of the tentacular cirri I could also observe some stout slightly curved bristles, not mentioned by POTTS.

8. *Lagisca* sp.

Stat. 51. Madura Bay. Depth from 69 to 91 M. 1 specimen.

A female worm, long 12 mm., with about 40 segments, that lacks all its elytra and most of its cirri, too incomplete for a satisfactory description or identification.

Genus **Scalisetosus** Mc Intosh [1]).

Body of moderate length. Eyes large, placed closely together on each side of the prostomium. Elytra 15 pairs or more, inserted on the same segments as in the preceding genera; they cover the dorsum in front, but in the posterior region leave the central part bare. Dorsal bristles slightly curved, with some blunt spines; ventral bristles hooked, with semilunar cusp.

Though the first-described species of this genus, *Scalisetosus ceramensis*, was mentioned in the Challenger Annelida, only fifteen years later, in the British Annelids (p. 372) Mc INTOSH gave the diagnosis of this genus; afterwards MARENZELLER [2]), MOORE [3]) and IZUKA [4]) have described from the

1) Challenger Annelida, p. 103.
2) Südjapanische Anneliden, III, p. 13, Pl. III, fig. 12.
3) Proc. Acad. Nat. Sc. Philadelphia, Vol. LV, 1903, p. 403.
4) Loc. cit. p. 59.

coast of Japan several well-preserved species, which in many regards agree with the species from Ceram. I think, that *Polynoë crinoidicola* Potts must be ranged also in the same genus.

1. ? *Scalisetosus ceramensis* Mc. Intosh.

Mc Intosh, Challenger Annelida Polychaeta, p. 103, Pl. X A, figs. 13 and 14.

Stat. 267. 5° 54′ Lat. S., 132° 56′.7 Long. E. East of Great Kei Island. Depth 984 M. 1 incomplete specimen.

Length 10 mm.; segments 35. Presumably 15 elytra.

At the above-named Station a worm was dredged, that with regard to its bristles much agrees with *Scalis. ceramensis*; unfortunately Mc Intosh had only a single badly preserved specimen at his disposal and therefore could not give a detailed description. Our specimen also lacks the elytra and cirri. The frontal peaks of the prostomium are very distinct; palps and antennae are absent. On each side of the head two large eyes are situated next to each other, the anterior of them lying laterally, the posterior one in front of the posterior margin of the head.

The parapodia have both lobes well-developed. The neuropodial lobe has its anterior lip very much elongated, with a filiform tip, extending beyond the point of the acicula, that lies enclosed in its base; its long and slender bristles have the distal end dilated, slightly falciform, obviously serrulated along both edges, with a small tooth below the tip, that however is not separated from the shaft by a semilunar cusp as in other species. The dorsal lobe is also pointed and elongated, but hardly reaches to half the length of the ventral one; its bristles are stout, half as long as the ventral ones, slightly curved and furnished with three spines instead of with the usual fringes.

2. *Scalisetosus (Polynoë) crinoidicola* Potts. Pl. XVI, figs. 6—8; Pl. XXI, fig. 1.

Potts, loc. cit. p. 337, Pl. XVIII, fig. 10; Pl. XX, fig. 30; Pl. XXI, figs. 39—41.

Stat. 164. 1° 42′.5 Lat. S., 130° 47′.5 Long. E. South off Salawatti. Depth 32 M. 1 specimen.

A small worm, measuring only $12^1/_2$ mm. in length; its dorsum is brownish black, somewhat paler in the median line, with two narrow white transverse lines over each segment. The parapodia as well as the ventral side of the body are yellowish, buff. The eyes are surrounded by a pale ring; the anterior pair are the larger, strongly protuberant. That they should "be raised on a distinct eminence" as mentioned by Potts, could however not be confirmed. The palps are somewhat longer than the lateral antennae; both are dark coloured, with the slender extremities colourless. The median antenna is lost, like in the specimens of Potts. The tentacular cirri are unequal in length; the dorsal ones longer than the palps, nearly of the same length as the proboscis. Of the fifteen pairs of elytra only a single one was left; it is circular, except a small notch near the eccentrical scar of attachment, from which several nerve-trunks are ramifying towards the circumference. The surface of the elytron is smooth, its border without fringes; at the inferior side it was partly covered with a layer of pigment-cells

of the same colour as the dorsum. The parapodia (Pl. XXI, fig. 1) are characterised by the elongated, conical shape of the neuropodium; the notopodium is much shorter, rudimentary, and its acicula is surrounded by a short cylindrical process. The notopodial bristles (Pl. XVI, fig. 6) have the usual curved shape, but in stead of the numerous transverse rows they bear only four teeth along their edge, one immediately below the tip; the neuropodial fascicle consists of two kinds of bristles: (1) a dorsal group with the distal part long and slender, somewhat curved, serrated along its edge and separated from the shaft by a semilunar laciniate fringe (Pl. XVI, fig. 8), and (2) a ventral group with a short falcated distal part, also with a semilunar fringe beneath (Pl. XVI, fig. 7). Dorsally this falcated part grows more slender and more straight and serrated along its edge.

This specimen best agrees with the description and figures of *Polynoë crinoidicola*, found by POTTS on Crinoids from the Maldives.

3. ? *Scalisetosus longicirrus* (Schmarda).

SCHMARDA, loc. cit. p. 152, Pl. XXXVI, fig. 309.
MARENZELLER, Südjapanische Anneliden III, p. 12, Pl. III, fig. 10.

Stat. 310. 8° 30′ Lat. S., 119° 7′.5 Long E. Sapeh Strait. Depth 73 M. 1 specimen.

A female specimen, broken into two fragments, indifferently preserved, without elytra and cirri. The dorsal bristles like in *Scalis. longicirrus* with three or four teeth; the ventral bristles finely serrated above the semilunar cusp, with curved tip. I do not understand why AUGENER[1]) states "*Scalisetosus longicirrus* Schm. unterscheidet sich durch die Papillentragenden Elytra" for SCHMARDA says nothing about it and figured an elytron "without papillae"; with regard to *Polynoë rutilans* Gr.[1]), that presumably is identical with *Scalis. longicirrus*, GRUBE mentioned "elytra glabra". AUGENER's *Scalis. Hartmeyeri*[2]) appears to be sufficiently characterised by its hook-shaped ventral bristles in the 2[d] and 3[d] segment.

4. *Scalisetosus papilliferus* Horst. Pl. XXI, figs. 2—4.

HORST, Zool. Mededeel. R. Museum Nat. Historie, Leiden, vol. I, 1915, p. 17.

Stat. 43. Anchorage of Pulu Sarassa, Postillon Islands. Depth up to 36 M. 1 specimen.
Stat. 99. 6° 7′.5 Lat. N., 120° 26′ Long E. Anchorage off North Ubian. Depth 16—23 M. 1 incomplete specimen.
Stat. 172. Off Gisser. Townet. 1 incomplete specimen.

Though several species of the genus *Scalisetosus* already have been described, these specimens could not be identified with one of them, on account of the characteristical feature of its elytra. The worm of Stat. 99 is only represented by an anterior fragment that has a length of 5 mm. and consists of 18 segments; the specimen of Stat. 43 is broken into two pieces and has a length of 12 mm. The head (Pl. XXI, fig. 2) is divided in two halves by a median groove, from the anterior

1) Annelidenfauna der Philippinen, p. 37, Pl. II, fig. 5.
2) Die Fauna Südwest-Australiens, Polychaeta, p. 119, Pl. II, figs. 17 and 18 and textfigs. 5 *a—e*.

part of which the tentacle emerges with its basal joint; its frontal margin is rounded, whereas the lateral sides are somewhat prominent. There are two pairs of large eyes, situated laterally, close to each other. The lateral antennae, which have a filiform distal part, are about twice as long as the head; the tentacle is absent. The palps swollen in their basal part, filiform distally, are nearly thrice as long as the head, smooth. Only a single pair of elytra is left, viz. on the 17th segment of the worm of Stat. 99 and on the fragment of Stat. 172; they (Pl. XXI, fig. 3) are nearly rounded, translucent, with an eccentrical scar of attachment. Their exterior half shows about twenty large, club-shaped papillae (Pl. XXI, fig. 4), that are covered over their whole surface with small tubercles, whereas on the tip some larger ones occur. The cirrophores are situated in the line of the elytrophores; no dorsal tubercles are present.

In the parapodia the neuropodium is highly-developed, with an elongated, triangular anterior lip, that contains the distal end of the acicula. Its fascicle consists of bristles, that have the distal end separated from the shaft by a semilunar laciniated cusp and are provided with a bifid tip; the ventral ones are serrated along both edges, whereas the dorsal bristles have a number of laciniated fringes. The notopodium is rudimentary, with a short pointed lip, which contains the acicula and a number of faintly bent, undivided setae with some laciniate fringes along their edge. The dorsal cirrus with filiform distal part, is nearly as long as the notopodial fascicle; the ventral cirrus does not extend much beyond half the length of the neuropodium.

Scalisetosus papilliferus is especially characterised by the large papillae of its elytra, for most of the *Scalisetosus*-species, hitherto described, have the elytra smooth; in *Sc. pellucidus* Ehl.[1]) only they are provided with bell-shaped papillae with tactile hairs on the tip.

5. *Scalisetosus tentaculatus* Horst. Pl. XXI, figs. 5—7.

HORST, Zool. Mededeel. R. Museum Nat. Historie, Leiden, vol. I, 1915, p. 18.

Stat. 49a. 8° 23'.5 Lat. S., 119° 4'.6 Long. E. Sapeh Strait. Depth 69 M. 1 incomplete specimen.
Stat. 274. 5° 28'.2 Lat. S., 134° 53'.9 Long. E. East off Aru Islands. Depth 57 M. 1 specimen.

An anterior fragment of a worm, measuring only 7 mm. and consisting of 20 segments, was captured at Stat. 49a and a complete specimen without elytra at Stat. 274.

The prostomium has a deep incision, from which the tentacle arises, that is long and slender, about twice as long as the lateral antennae. Palps smooth, tapering, nearly as long as the lateral antennae, which have about thrice the length of the head. Eyes inconspicuous, situated in front of the posterior margin of the prostomium. The elytra (Pl. XXI, fig. 5) are large, overlapping each other in the median dorsal line; they have an elliptical shape, with the scar of attachment situated eccentrically and the exterior half of the surface covered with small oval papillae. The parapodia have a dorsal cirrus, that is very long, extending beyond the distal extremity of the neuropodial bristles; moreover their ventral cirrus is rather long, reaching beyond the tip of the ventral lobe. The neuropodial lobe has an anterior lip, that is long, conical, surrounding the acicula; the notopodial lobe also is elongated, cylindrical, but does not

1) Die Borstenwürmer, p. 105.

extend beyond half the length of the neuropodial one. The notopodial bristles (Pl. XXI, fig. 6) are stout, slightly curved, usually provided with two spines, situated at some distance from the tip; in some of them only a single spine is present. The neuropodial fascicle contains two kinds of setae: 1° the dorsal ones (Pl. XXI, fig. 7*a*) are slender, about twice as long as the notopodial bristles and have the distal part beyond the semilunar cusp finely serrated with a faintly bifurcated tip; 2° the ventral bristles are shorter, stouter, hook-shaped with their distal part serrated along their edge.

This species certainly is closely allied to *Scalis. laevis* Mrz.[1]), that however is distinguished by having the elytra covered with slender, cylindrical papillae, whereas the notopodial bristles are quite smooth or provided with a single tooth.

6. *Scalisetosus* sp. Pl. XXI, figs. 8—10.

Stat. 260. 5° 36'.5 Lat. S., 132° 55'.2 Long. E. West off Great Kei Island. Depth 90 M. 1 incomplete specimen.

An anterior fragment of an other *Scalisetosus*-species, measuring 5 mm. in length, is characterised by its shining white prostomium, whereas the dorsum of the body is marbled with black. All cirri and elytra are absent. The prostomium is nearly round, divided by a median dorsal groove, that widens anteriorly, in two semilunar halves; two pairs of pale, large eyes are situated laterally on its posterior half. Both lobes of the parapodia (Pl. XXI, fig. 8) have an elongated, pointed, distal extremity, surrounding the tip of the acicula. The notopodial bristles (Pl. XXI, fig. 10) are till their distal end provided with laciniated fringes; the neuropodial ones (Pl. XXI, fig. 9), that show the usual semilunar cusp, have a faintly bifurcated tip and are feebly serrated along their edge.

Genus **Admetella** Mc Intosh[2])

Body elongated, with 75 segments; 30 pairs of scales, inserted upon segments 2, 4, 5, 7 ... 23, 26 etc. Head with the lateral frontal corners elongated, triangular; eyes absent. Both lobes of the parapodia with an elongated distal extremity; their bristles long, vitreous.

1. *Admetella (Polynoë) longipedata* Mc Intosh.

Mc Intosh, loc. cit., p. 124, Pl. XIV, fig. 5, Pl. XX, fig. 6, Pl. XII A, fig. 17.
Augener, West Indische Polychäten, p. 123.
Ehlers, Bodensässigen Anneliden der deutschen Tiefsee-Expedition, p. 40, Pl. II, figs. 10, 11, Pl. III, figs. 1—5.

Stat. 316. 7° 19'.4 Lat. S., 116° 49'.5 Long. E. East off Paternoster Islands. Depth 538 M. 2 specimens.

Two specimens, a larger one, measuring about 60 mm. in length, and a smaller one

1) Südjapan. Anneliden III, 1902, p. 13, Pl. III, fig. 12.
2) Challenger-Annelida, p. 124.

nearly half as long, must be identified with the above-named species. Unfortunately both are in a bad state of preservation and lack all the cirri as well as the elytra; the antennae also are absent and the worms only show the basal part of the tentacle. However the palps and the parapodia with their bristles are rather well preserved. The thin triangular processes of the head — according to EHLERS homologous with the lateral frontal corners — could be recognised, but nothing can be said about their real nature. The notopodial fascicle is much less developed than the neuropodial one. The majority of the bristles are translucent, flattened out in their distal part and finely serrated along both edges; they have an elongated, smooth, triangular tip, that is furnished with a triangular ridge. That the tip should be bifid, as suggested by MC INTOSH, or provided with a pore, according to EHLERS, could not be confirmed.

This species for the first time was dredged by the Challenger at a depth of 1375 fath. East off Prince Edward island; afterwards it was found in the West-Indian Sea by "the Blake" in 291 fath. and by "the Valdivia" off the Somali coast at a depth of 1242 M.

Genus **Polynoë** Savigny [1]).

Body elongate, consisting of more than 45 segments; elytra 15 pairs or more, inserted upon segments 2, 4, 5, 7 .... 23, 26, 29 etc., (*Hololepidella* Willey [2]) or restricted to the anterior region of the body (*Hemilepidia* Schm.). Notopodial bristles more slender than neuropodial ones.

1. ? *Polynoë cornuta* Fischli. Pl. XXI, figs. 11 and 12.

FISCHLI, Polychäten von Ternate, p. 99, Pl. IV—VII, figs. 3, 4, 23, 34, 50 and 51.

Stat. 12. 7° 15′ Lat. S., 115° 15′.6 Long. E. South off Kangeang. Depth 289 M. 18 specimens.

The worms dredged at the above-named Station, in my opinion, must be identified with *Polynoë cornuta* from Ternate, described by FISCHLI, though there is some discrepancy between their characters and his description. Unfortunately he could only dispose of a fragment without elytra and dorsal cirri. The Siboga-specimens also are in an indifferent state of preservation and lack nearly all the scales. Each scale (Pl. XXI, fig. 11) is densely fringed with long papillae along its posterior and outer border; its surface over a large area is covered with tubercles, increasing in length externally and passing gradually into conical thorns and cylindrical spines. Their scar of attachment is situated eccentrically. The parapodia (Pl. XXI, fig. 12) have the neuropodium more developed than the notopodium; the first one is elongated, conical, with a slender cylindrical lobe at its tip and contains a large fascicle of setae, that have the distal part dilated, and bear large laciniated fringes and a slender tooth below the tip. The notopodium also has a lobe, enclosing the acicula, half as long as the neuropodium; its fascicle consists of bristles

1) Système des Annélides, p. 20.
2) Loc. cit. p. 252.

of the usual type, with an acute, bare distal end. According to FISCHLI's description, these bristles should be smooth. The ventral cirrus does not extend to the extremity of the neuropodial lobe. The head is more broad than long, dotted with a brownish pigment especially in its anterior part; it is divided by a median dorsal groove in two halves, that have a rounded frontal border and are provided with a short peak. In the median line a short, oval tentacle arises, that presumably lacks the distal joint; on each side a short antenna is situated, not quite as long as the head, with a rather thick basal part and filiform tip. The palps are stout, twice as long as the head, tapering distally, faintly annulated; according to FISCHLI they should have distinct annular grooves. There are two pairs of large eyes, far remote from each other; the anterior pair is situated in the middle of the lateral side, the posterior pair in front of the posterior margin of the head. The median area of the dorsum is brownish, on each segment being divided by a pale, transverse line in an anterior broad and a posterior narrow field. The anterior part of the dorsum however is colourless. The largest specimen has a length of about 15 mm.; the number of its segments amounts to 40.

2. *Polynoë kampeni* Horst. Pl. XXI, figs. 13, 14 *a* and *b*.

HORST, Zool. Mededeel. R. Museum Nat. Historie, Leiden, vol. I, 1915, p. 20.

3° 12′ Lat. S., 116° 38′ Long. E. South East off Borneo. Dec. 1908. P. N. VAN KAMPEN. 1 specimen.

A slender worm, long about 10 mm.; the number of its segments amounts to 44. The head (Pl. XXI, fig. 13) much agrees with that of *Lagisca magellanica*, var. *Grubei* Mc Int. (Challenger Annelida Polychaeta, Pl. III, fig. 5); it is divided by a median groove into two oval halves, each terminating in a prominent frontal peak. Both pairs of eyes are situated on the posterior half of the head; the anterior pair a little behind the middle of the lateral side, the other pair in front of the posterior margin. The tentacle is slender, somewhat longer than the head. The lateral antennae are tiny and rather short, about a fourth of the length of the tentacle. The palps are stout in their basal part, terminating in a filiform tip. There have been 18 pairs of scales, but only the posterior ones are left and cover the anal end of the body. They are elliptical, translucent, finely granular, entirely smooth without any appendages; the scar of attachment is placed somewhat eccentrically, with a nerve-ganglion in its vicinity, from which numerous dichotomously ramifying stems are emerging. The ventral branch of the parapodia is more developed than the dorsal one, and has an elongated triangular lobe; its fascicle contains in its ventral part setae (Pl. XXI, fig. 14 *b*) with a simple curved tip, without secondary process and with a subterminal dilated part, finely denticulated. Of the dorsal bristles (Pl. XXI, fig. 14 *a*) a few have a subterminal dilated part with laciniated fringes, whereas other are slender, not dilated, finely denticulated. The notopodium, with a short cylindrical lobe, enclosing the acicula, has the bristles slightly curved, denticulated. The dorsal cirri are long and slender, tapering distally, extending beyond the extremity of the bristle-fascicles; the ventral cirrus extends somewhat beyond half the length of the foot.

3. *Polynoë nigro-punctata* Horst. Pl. XXI, figs. 15—17.

HORST, Zool. Mededeel. R. Museum Nat. Historie, Leiden, vol. I, 1915, p. 20.

Stat. 231. Ambon Anchorage. Reef. 1 specimen.

At this Station a small, slender Polynoid-worm was captured, characterised by a nice coloration and measuring 8 mm. in length; perhaps it is a young worm. The head (Pl. XXI, fig. 15) is dotted with black, interrupted by a white median groove and a white ring around the eyes; also the dorsum of the body is marked with black spots, interrupted by a curved transverse line, that divides the dorsal area in a narrow anterior and a broad posterior field and terminates laterally on the elytrophores or the tubercula dorsalia. The head, nearly as long as broad, is divided by a broad median groove into two oval halves, each provided with a conspicuous frontal peak. The tentacle consists of a short, stout, basal part and a slender, distal joint, somewhat longer than the head; the lateral antennae are short, conical, with a filiform tip, about a fourth of the length of the tentacle. Of the palps only the left is present; it is stout, conical, not quite as long as the tentacle. Of the tentacular cirri the dorsal is longer than the ventral one, and nearly as long as the tentacle. The elytra are all wanting, but presumably there have been 20 pairs of them; the posterior scales are not situated as usually, for the 15th pair, in stead of on segment XXXII, is placed on segment XXXI, the 16th on S. XXXIV, the 17th on S. XXXVI, the 18th on S. XXXVIII, the 19th on S. XL and the 20th pair on segment XLII. The neuropodial branch of the parapodia has an elongated conical lobe, enclosing the acicula; its bristles (Pl. XXI, fig. 17) are slender, with a well-marked hook at the tip and a small secondary tooth below it, whereas the dilated subterminal part is provided with laciniated fringes. The notopodium also is provided with a pointed lobe, not so long as the neuropodial one; its setae (Pl. XXI, fig. 16) are slightly curved, serrated. The dorsal cirri are rather long, extending beyond the distal extremity of the neuropodial fascicle; the ventral cirri are stout, but do not reach the distal end of the feet.

4. *Polynoë (Hemilepidia) versluysi* Horst. Pl. XXI, figs. 18 and 19.

HORST, Zool. Mededeel. R. Museum Nat. Historie, Leiden, vol. I, 1915, p. 19.

Stat. 251. 5° 28′.4 Lat. S., 132° 0′.2 Long. E. South off Kur Island. Depth 204 M. 4 specimens.
Stat. 253. 5° 48′.2 Lat. S., 132° 13′ Long. E. South off Taam Island. Depth 304 M. 8 specimens.

VERSLUYS met with a Polynoid-worm, commensally living on *Primnoidae* (*Thouarella hilgendorfi* Stud.); it is characterised by its long dorsal cirri and its elytra, that are restricted to the anterior half of the body. However some of the specimens of Stat. 253 were presumably found in free state. The largest specimen measures about 25 mm. in length; it consists of 65 segments. They are of a dark-brown colour in the median dorsal and ventral line. The head is divided by a median dorsal groove in two halves; between them the basal part of a tentacle arises, that bears a long and slender distal joint, reaching till on the 5th segment. The lateral antennae are hardly as long as the head; the palpi, about twice as long, are rather stout at the base, tapering distally, smooth. There are two pairs of large eyes, the posterior one being

situated in front of the posterior margin of the head, whereas the anterior pair occur on the lateral prominence. In the *Hemilepidia*-species from the Cape the anterior eyes are placed just beneath the frontal peaks of the head. Of the tentacular cirri the dorsal is at least twice as long as the ventral one. 15 pairs of elytra (Pl. XXI, fig. 18) are restricted to the anterior region of the body; each of them is rounded rectangular, with the scar of attachment situated eccentrically. Their surface is densely beset with small, obtuse, spinous tubercles and some small globular papillae occur along their margin. The parapodia (Pl. XXI, fig. 19) have the notopodium less developed, containing only some slightly bent bristles of the usual shape, that are fringed till at some distance from the tip; its anterior lip is triangularly elongated, enclosing the acicula. The neuropodium is much stouter, with a lip, ending into a small bended lobe; its fascicle consists of a dorsal and a ventral group of bifid setae, with laciniated fringes on the dilated distal part and a bare portion beneath the tip, that bears a short acute tooth. The dorsal cirri are very slender, nearly as long as the breadth of the body in its middle region, in the posterior part reaching far beyond it; they are furnished with a few cylindrical papillae. The ventral cirri are much shorter and only reach the distal extremity of the neuropodial fascicle. No dorsal tubercles are present. According to WILLEY[1]) this species must be ranged in the genus *Hemilepidia* Schmarda, comprising the species, in which there are 15 pairs of elytra, restricted to the anterior region of the body: *Polynoë scolopendrina*, *Hemilepidia erythrotaenia*, *Nemidia torelli* and *Enipo kinbergi;* though in the two last species the setae have another shape than in the foregoing. Therefore the association of these species appears somewhat heterogeneous (see also BERGSTRÖM: die Polynoiden der Schwed. Südpolarexpedition 1901—03, Zoolog. bidrag frå Uppala, Bd. IV, 1916, p. 279.) VERSLUYS found these worms in ducts, formed by the short branches of *Thouarella hilgendorfi*[2]), placed close behind each other and having their tips inclined towards each other, thus forming a kind of avenue. Also in other Hydrocorallina commensal Polynoidae are met with; MARENZELLER found a *Lagisca*-species, living in ducts of *Errina macrogastra* and *Stenohelia profunda*[3]).

5. *Polynoë* sp. Pl. XXI, fig. 20.

Stat. 267. 5° 54′ Lat. S., 132° 56′.7 Long. E. East off Kei Islands. Depth 984 M. 2 specimens.

Two specimens of *Polynoë*, not well enough preserved, to make a satisfactory description possible. They measure nearly 14 mm. in length, whereas the number of segments is about 45. The head is somewhat broader than long, rounded trapezoidal, with a broad median dorsal groove, but without frontal peaks. There are two pairs of large eyes, the anterior situated on the lateral prominences of the head, the posterior pair on a short distance. The lateral antennae are short, not half as long as the head, conical, tapering distally; the tentacle is absent. The palps are stout, abruptly terminating with a filiform tip, about twice as long as the head. Only a single scale was left; it is elliptical, with a smooth margin and a reticular

1) Loc. cit. p. 252.
2) Siboga-expeditie, vol. XIII, Die Gorgoniden: Primnoidae, p. 25.
3) *Lagisca irritans*, ein Symbiont von Hydrokorallen; Bulletin Museum Comp. Zool. Harvard College Vol. XLIII, 1904.

structure, having half its surface covered with small conical tubercles. The neuropodial branch of the parapodia is triangular, with a cylindrical lobe at its tip. Its bristles, of the usual structure, are faintly bifid, with a rudimentary secondary process; the dorsal setae (Pl. XXI, fig. 20) terminating in a blunt tooth, whereas the ventral ones have an acute curved tip. The rounded notopodial branch also has a conical lobe, enclosing the acicula; its bristles are slightly bent, and have the usual appearance. The ventral cirrus is dilated in its basal part, tapering distally, nearly as long as the neuropodial branch.

Sub-family Sigalioninae.

Body elongate and narrow. Proboscis with $^{9}/_{9}$, $^{11}/_{11}$ or $^{13}/_{13}$ papillae and four teeth. Generally three antennae; the lateral ones inserted on the anterior margin of the prostomium or fused with the first parapodia. Eyes sessile, two or four. Elytra on the segments 2, 4, 5, 7 — 25, 27, 28 and the succeeding ones; generally a branchial appendix on all the segments behind the third one. Ctenidia often present on the parapodia and the prostomium. Dorsal bristles simple, spinous and tapering; ventral bristles compound, their terminal appendix being often long, multi-articulate and bifid. Two long anal cirri.

Though our knowledge of the Sigalioninae much increased in the last years thanks to the arduous investigations of Mc Intosh, Pruvot et Racovitza, Darboux, Willey a. o., yet there still reigns a good deal of confusion about the exact diagnosis of the genera. *Sthenelais simplex* Ehl.[1]) f. i. has rightly been ranged by Augener[2]) among the genus *Leanira; Leanira Giardi* Darb.[3]), according to the investigations of Marenzeller, belongs to *Sthenelais*[4]) and *Thalenessa stylolepis* Willey[5]) will prove, as I presume, to be a species of *Sigalion*. This may partly be ascribed to the circumstance, that only a few of the investigators could dispose of a large material and therefore were obliged to borrow their knowledge from the often inadequate descriptions of others; but it may also have been caused thereby, that there was no agreement about the characters, that offer a thrustworthy criterion for the distinction of the genera. Marenzeller however in his critical account of the genus *Leanira*[6]), has given us a clear review of the various often inexact ideas of the authors regarding this matter and stated, that besides the presence or absence of the tentacle (median antenna) and the situation of the lateral antennae (on the prostomium or on the buccal segment), the structure of the ventral bristles furnish "das ausschlaggebende Moment" to distinguish the different genera. Unfortunately a "lapsus calami" has crept into his account; for he says "ausserdem charakterisirt Mc Intosh seine Gattung (*Thalenessa*) noch durch die Bemerkung, dass der unpaare Stirn-

1) Ehlers, Florida-Anneliden, 1887, p. 60, Pl. XIII, figs. 2, 3, Pl. XIV, figs. 1—6.
2) West-Indische Polychaeten, p. 106.
3) Loc. cit. p. 123.
4) v. Marenzeller, Polychäten des Grundes, 1902, p. 7; Fauvel, Polychètes de l'Hirondelle et de la Princesse-Alice. 1913, p. 30.
5) Loc. cit. p. 261.
6) Polychäten des Grundes, p. 8.

fühler sehr kurz sei, dass zwei Antennen (unsere Fühlerwimperpolster) vorhanden ...", whereas the lateral antennae of *Thalenessa* have nothing to do with antennal ctenidia.

The genera of *Sigalioninae* may be easily recognized by the following key:

Median antenna (tentacle)

- absent . . . . . *Sigalion* Aud. et M. Edw.
- present
  - Lateral antennae inserted upon the prostomium . . . . . *Euthalenessa* Darb.
  - Lateral antennae fused with the buccal segment
    - Ctenidia present
      - Neuropod. setae with cheliform appendix
        - appendix mono- and multi-articulate . *Sthenelais* Kinb.
        - appendix only multi-articulate . *Eusthenelais* Mc Int.
      - neuropod. setae with pectin. canaliculate appendix . *Leanira* Kinb.
      - neuropod. setae with knife-like appendix . . . . . *Euleanira* Horst.
    - Ctenidia absent . . . . . *Psammolyce* Kinb.

Genus **Euthalenessa** Darboux [1]).

(*Thalenessa* Mc. Intosh [2])

Prostomium with three small antennae and four large eyes. A dorsal cirrus on the third segment. Elytra generally with ramose papillae on the margin. Parapodia with ctenidia on the dorsum and stylodes at the tip. Dorsal bristles slender, with spiral, denticulate whorls; ventral bristles, with cheliform, simple or multi-articulate appendix.

The genus *Thalenessa* was established by Baird in 1868 for *Sigalion Edwardsi* Kinb., a species that however has been proved to belong in fact to the genus *Sigalion*, because the tentacle is absent. It was therefore at variance with the rules of nomenclature, that Mc Intosh afterwards gave that name to a group of Sigalionidae, with a short tentacle. Consequently Darboux rightly proposed to use in stead of *Thalenessa* the name of *Euthalenessa*, as also has been approved by Marenzeller (Polychäten des Grundes, 1902, p. 8) and Ehlers (Die bodensässigen Anneliden, p. 52).

1. ? *Euthalenessa oculata* (Mc Int.). Pl. XXII, figs. 1—3.
(*Thalenessa oculata* Mc Int.).

Mc Intosh, loc. cit., p. 142, Pl. XXI, figs. 1, 2; Pl. XXIII, fig. 12; Pl. XXV, fig. 3; Pl. XIII A, figs. 11 and 12.
Izuka, loc. cit., p. 86, pl. X, figs. 1 and 2.

Stat. 37. Sailus Ketjil, Paternoster Islands. Depth 27 M. and less. 1 specimen.
Stat. 60. Haingsisi, Samau Island. Shore-exploration. 3 specimens.
Stat. 99. 6° 7'.5 Lat. N., 120° 26' Long. E. Anchorage off North Ubian. Depth 16—23 M. 1 incomplete specimen.

1) Loc. cit. p. 79.
2) Loc. cit. p. 139.

Stat. 240. Banda Anchorage. Depth 9—45 M. 11 specimens.
Stat. 315. Anchorage east of Sailus Besar, Paternoster Islands. Depth up to 36 M. 1 incomplete specimen.

In the neighbourhood of Banda 11 specimens of an *Euthalenessa*-species were collected, that much resemble *E. oculata*, according to the descriptions of Mc Intosh and Isuka, based on worms, found in Bass Strait and near the coast of Japan. Nearly all the Siboga-specimens are incomplete and miss the posterior body-region; only a single one is complete. The middle of the dorsum is bare, because the elytra are diverging, except those of the first pair, that lie close to each other above the prostomium, almost entirely hiding it. Some of them are blackish, others of a red colour, because the elytra are provided with a black or red pigment, that extends especially along their posterior and median border and the scar of attachment; the middle of the dorsum also shows that colour. The complete specimen has its posterior ventral region marbled, except in the intersegmental grooves and a white median band, bordered on each side by a dark line. The largest specimen has a length of 52 mm. and consists of about 125 segments.

The prostomium (Pl. XXII, fig. 1) is characterised by the enormous size of the eyes; the anterior pair of them show a large semilunar pigment-area, whereas in the posterior pair this area is roundish. There are three small, conical antennae, two at the frontal margin and a median one arising at some distance behind them from the middle of the dorsum of the head; they have a conspicuous distal joint, conical shaped. In *Thalenessa digitata*, according to the figures and the description of Mc Intosh[1]) and Willey[2]) the three antennae arise from the frontal margin of the head, like as in *Th. gracilis* Fischli[3]) and *Euth. insignis* Ehl.[4]), whereas in *Th. djiboutiensis*[5]) the lateral are situated somewhat behind the the middle one. The palps are very long, smooth and tapering distally; bent downward and backward they reach the tenth segment. The parapodium of the buccal segment shows an acicula only and is provided along the internal margin of its basal part with a narrow, convex lamella; of both tentacular cirri the dorsal is somewhat shorter than the ventral one. The second segment bears the first pair of elytra; they are cordiform, with a smooth margin and their broadest part directed frontward, whereas the scar of attachment is situated somewhat eccentrical.

The scales of the fourth segment are furnished along their internal border with six dichotomously branched papillae; more hindwards the scales increase in size, the number of papillae amount to ten and their anterior margin becomes more concave, giving to the posterior scales a reniform appearance. The third parapodium bears a dorsal cirrus, that consists of a short basal part (cirrophore), and a terminal joint, about twice and a half as long as the former. On the dorsum of the parapodium in this region there are two inversed conical ctenidia. The notopodium is surrounded by a cup-shaped lamella, divided by a fissure in two halves; the posterior half bears

1) Loc. cit. p. 140; pl. XXII, fig. 2.
2) Loc. cit. p. 260; Pl. II, fig. 52.
3) Loc. cit. p. 101; Pl. IV, figs. 5 and 7. Fig. 24, Pl. V, of this paper, representing a parapodium, is placed upside down; the organ, indicated here as a ventral cirrus, is presumably a branchial appendix, whereas the real ventral cirrus is named dorsal cirrus.
4) Ehlers, Bodens. Annel. p. 52, Pl. I, fig. 11.
5) Loc. cit. pl. VII, fig. 114.

a long digitiform prolongation, whereas there are four digitiform stylodes along the anterior half of the notopodium. The notopodial fascicle, as usually, consists of simple, whorled bristles. The neuropodium bears on its anterior side a lamella, divided by a fissure in two round lobes; opposite to this fissure lies the distal point of the acicula, beneath which a small oval lobe is visible. On the place where the acicula emerges from the foot, the cuticula is strongly thickened. Also the posterior lamella is divided in two parts, the inferior being narrower than that of the frontal side and the superior lobe is prolonged in a pointed tip. There arise from the dorsum of the neuropodium four digitiform stylodes, whereas in *Th. digitata* and *Th. djiboutiensis* the number of these appears to be much greater. The bristle-fascicle consists of the usual bifid setae; those of the upper and lower series have longer appendices, with more joints than the central ones, that consist of two or three joints. In the succeeding segments these many-jointed bristles nearly all disappear and f. i. in the 10th segment the neuropodium almost only shows bristles with a short, stout appendix, consisting of a single joint (Pl. XXII, fig. 2); in these bristles the distal portion of the shaft is smooth, without spinous rows. The statement, that the difference in the arrangement of the setae in the anterior parapodia, compared to that in the rest of the body, should be a specific character of *Th. digitata*, as supposed by WILLEY and POTTS, cannot be maintained. About the middle of the body (30th segment) there reappear in the upper as well as in the lower series of the neuropodial fascicles bristles with appendices, consisting of several joints; also the shaft beneath the tip is provided with one or two faint ridges. In this body-region there are two large cupshaped ctenidia on the dorsum of the feet and a smaller one in the inner angle of the branchia. In the posterior segments the many-jointed bristles of the neuropodia disappear anew and only those with a simple appendix remain; however this appendix is much longer and more slender than that in the bristles of the anterior body-region and the shaft in its distal part is provided with three distinct spinous rows (Pl. XXII, fig. 3). Also the ventral cirrus grows longer and extends somewhat beyond the distal extremity of the neuropodium.

On the shore of Haingsisi three incomplete worms were collected, that somewhat differ from the Banda-specimens with regard to their colour as well as to some points of their structure. The red pigment of the elytra shows a reticular arrangement and is accumulated in the neighbourhood of the scar of attachment and of the internal border, thus giving rise to two series of dark spots on both sides of the median dorsal line. Also the anterior part of the dorsum, that is uncovered, till about the 13th segment shows the red colour, bordered on each side by a white line. The buccal segment next to the acicula shows a couple of fine bristles and is also provided with a ventral fascicle of slender whorled setae. The second segment is specially distinguished by having more stylodes (9) on its neuropodium than this segment bears in the Banda-specimens; also the ventral cirrus appears to be somewhat longer, extending beyond the distal extremity of the parapodium.

Unfortunately we possess detailed descriptions of *Th. digitata* and *Th. djiboutiensis*, and *Euth. insignis* only; therefore it is no easy task to decide wether our specimens belong to a species already described. With regard to the shape of the head they much agree with *Th. oculata*; however *Th. oculata* is considered by WILLEY as "another form of *Th. digitata*, slightly

differing from the type". *Th. gracilis* from Ternate undoubtedly is an other species; in this worm the whole dorsum is covered by the scales, that have their external border furnished with undivided spines and bear globular papillae on their upper side.

Genus **Sigalion** Audouin et Milne Edwards[1]):

Median antenna (tentacle) absent; lateral antennae short and papilliform, fixed to the anterior margin of the prostomium. Four small eyes. No dorsal cirrus on the third segment. Elytra with pinnate papillae along the outer margin. Parapodia with ctenidia on the dorsum and stylodes at the tip. Dorsal bristles slender, with denticulate whorls and a bifurcated tip. Ventral bristle-fascicle consisting of compound setae with a cheliform, simple or multi-articulate appendix; in its dorsal part some simple bristles with spinous whorls on their distal extremity. Papillae of the proboscis $^{13}/_{13}$.

1. *Sigalion bandaënsis* n. sp. Pl. XXII, figs. 4 and 5.

Stat. 240. Banda Anchorage. Depth 9—45 M. 2 incomplete specimens.

The cephalic lobe is rounded trapezoidal, with its broadest side anteriorly; two papilliform antennae are inserted on its anterior margin. A pair of longitudinal, inconspicuous pigment-spots, presumably due to the coalescence of two spots, occur in front of the middle of its dorsum. The two anterior parapodia are pointing forward, whereas the third one is pushed away under the second one. The dorsal tentacular cirrus is somewhat shorter than the ventral one, like in *Sigalion arenicola*[2]) and *Sig. pourtalesii*[3]); also the ventral cirrus of the five anterior segments is rather long and extends beyond the parapodial extremity. The palps, bent downward and backward, reach the 9th segment. The third segment has no dorsal cirrus. The first branchia lies on the 5th segment and posteriorly they occur on all the succeeding segments. The anterior elytra are small, oval, with an eccentrical scar of attachment and are inserted upon a long elytrophore; they bear on the external border half a dozen of papillae, with three branches on the tip, only the two last ones are undivided. Posteriorly the scales increase in size and grow reniform; they are provided with a dozen of ramified papillae, that bear no more than five or six branches, whereas next to their base usually an undivided filament arises. The scar of attachment lies in the centre (Pl. XXII, fig. 4).

The parapodia (Pl. XXII, fig. 5) are characterized by a rather long digitiform stylode at the distal extremity of the notopodium; as usually the dorsal fascicle consists of long, simple, capillary bristles with transverse, denticulated ridges along one side and a bifid tip. Mc Intosh unjustly ascribes this structure to imperfect preservation (Brit. Annelids p. 430). Three ctenidia occur between the base of the notopodium and the falciform branchia. The neuropodium bears on its dorsum a tubercular papilla; its fascicle, besides a couple of spirally-whorled, simple bristles, contains numerous compound, cheliform setae. Ehlers stated that in *Sig. pourtalesii*

1) Classification des Annélides: Ann. Sc. nat. t. 27, 1832, p. 438.
2) Verrill, New England Annelida; Transact. Connecticut Acad. Vol. IV, 1881, Pl. VII, fig. 5.
3) Ehlers, Florida-Anneliden, p. 57, Pl. XV, figs. 1—4; Pl. XVI, figs. 1—10.

these spirally-whorled setae are to be found only in the segments without elytra. The dorsal part of this fascicle consists of stout bristles with a simple appendix, while their shaft is smooth or only provided with a few ridges at the extremity; among these there occurs a couple of setae with an eight-jointed appendix. The ventral part of the fascicle consists of a dense tuft of slender bristles, with a multi-articulate appendix and a smooth shaft, not thicker than the appendix itself; among them there occur one or two stout bristles with a simple appendix.

In *Sig. pourtalesii* as well as in *Sig. arenicola* the shaft of some of the stout bristles appears to bear many more ridges than in our species. The Siboga-specimens could not be identified with *Sig. amboinensis*[1]), for according to GRUBE this species does not possess any ctenidia ("lobuli ciliati nulli") and the branches of the elytra-papillae appear to be more numerous and slender.

2. *Sigalion* sp.

Stat. 133. Anchorage off Lirung, Salibabu Island (Talaut isles). Depth up to 36 M. 1 specimen.

At the above-named Station an anterior fragment of a species of *Sigalion* was collected, that differs in some characters from the foregoing species. The number of papillae on the border of the elytra amounts to 19, bearing each 8 to 9 branches. In the neuropodial fascicle all compound bristles have a multi-articulate, cheliform appendix; there are no setae with simple appendix as in *Sig. bandaënsis*.

Genus **Sthenelais** Kinberg[2]).

Prostomium with a single median antenna (tentacle), usually with ctenidia at its basal joint; lateral antennae fused with the first parapodia. Parapodial and buccal ctenidia and also stylodes present. No dorsal cirrus on the third segment. Dorsal bristles simple, slender, with spirally arranged, denticulated whorls; setae of the ventral fascicle compound with a simple or multi-articulate, cheliform appendix, however in its upper part usually some simple bristles, with spinous whorls below the tip. Papillae of the proboscis $^{11}/_{11}$.

1. *Sthenelais variabilis* Potts. Pl. XXII, fig. 6.

POTTS, loc. cit. p. 349, Pl. XIX, figs. 22 and 23; Pl. XXI, fig. 63.

Stat. 51. Molo Strait. Depth 69—91 M. 1 incomplete specimen.
Stat. 114. 0° 58'.5 Lat. N., 122° 55' Long. E. Kwandang Bay entrance. Depth 75 M. 1 incomplete specimen.
Stat. 164. 1° 42'.5 Lat. S., 130° 47'.5 Long. E., Depth 32 M. 2 incomplete specimens.
Stat. 240. Banda Anchorage. Depth 9—45 M. 1 incomplete specimen.
Stat. 260. 5° 36'.5 Lat. S., 132° 55'.2 Long. E. Off Great Kei Island. Depth 90 M. 2 incomplete specimens.

Taking into account the appearance of the elytra and the composition of the neuro-

1) Anneliden-Ausbeute von S. M. S. Gazelle, p. 520.

2) In the synopsis of the species of *Sthenelais*, published by POTTS, undoubtedly a lapsus calami has crept in; in stead of notopodium ought to be read neuropodium.

pòdial fascicle, that in its upper part contains simple spinous as well as compound setae, the specimens from the above-named stations ought to be identified with *Sthenelais variabilis* Potts from Zanzibar and the Maldives; unfortunately Potts' description does not contain many peculiarities neither about the head nor about the parapodia. The scales cover the whole dorsum and are overlapping each other; the first pair excepted they are reniform, more or less covered with tubercles, that sometimes acquire the character of small spines. Rather long cilia occur at their outer border, some of them arising from the surface of the elytron. The prostomium is rounded trapezoidal, with a tentacle arising from the middle of its dorsum and a pair of conspicuous eyes on each side of the latter; the basal joint of the tentacle is transversely grooved and bears two large aliform ctenidia, that cover the anterior eyes and extend over the first parapodia. Its distal joint is not quite as long as the dorsal tentacular cirrus. The palps are not very long, about twice as long as the tentacle, bent backward, they reach the 6th segment. The first parapodium bears two tentacular cirri, the ventral measuring about a third of the dorsal one. The ventral cirrus of the second parapodium is not very long and hardly reaches the distal end of the parapodium. The first branchial appendix occurs on the second segment. The dorsal cirrus of the third segment is represented by an obtuse tubercle. The parapodia (Pl. XXII, fig. 6) are characterized by a rather great number of stylodes; besides a short cylindrical appendage in the vicinity of the distal end of the acicula in both branches of the feet, there occur along the ventral border of the neuropodium three or four long stylodes. Moreover two or three stylodes are situated next to the base of the ventral cirrus, that is provided with a hook-like enlargement; also the lip that surrounds the base of the large neuropodial setae bears several small cylindrical lobes. The club-shaped notopodium extends somewhat beyond the neuropodium and bears a fan of long, curved bristles; the neuropodium has a triangular border and in the dorsal part of its bristle-fascicle is provided with some simple setae, with spiral whorls below the tip. The shaft of its compound setae is not always smooth in its distal part, but often obviously spinous.

2. *Sthenelais dubiosa* n. sp. Pl. XXII, fig. 7.

Stat. 50. Bay of Badjo, West coast of Flores. Shore. 1 specimen.
Stat. 313. Anchorage east off Dangar Besar, Saleh Bay (Sumbawa). Reef. 1 specimen.

At the above-named stations two anterior fragments of a *Sthenelais*-species were collected, that with regard to the appearance of the scales and the shape of the head much agree with *Sth. variabilis*, but differ somewhat by the structure of their parapodia; also the palps appear to be somewhat longer than in the last-named species and being bent backward extend to the 10th segment. In the 10th parapodium (Pl. XXII, fig. 7) the neuropodial branch has a triangular border, that next to the tip bears two fusiform stylodes, both beset with some small papillae; its posterior lip consists of a large dorsal lobe, provided with four stylodes, and of a smaller ventral lobe, also bearing 4 short cylindrical stylodes (with papillae). Moreover several conical stylodes, situated next to each other, occur at the distal end of the ventral border. The notopodium, somewhat club-shaped, shows on its frontal as well as on its posterior side a couple of stylodes, beset with small papillae.

3. *Sthenelais orientalis* Potts. Pl. XXII, figs. 8 and 9; Pl. XXIII, figs. 1 and 2.

POTTS, loc. cit., p. 348, Pl. XXI, fig. 62.

Stat. 96. South east side of Pearl-bank, Sulu Archipelago. Depth 15 M. 1 specimen.
Stat. 99. 6°7'.5 Lat. N., 120°26' Long. E. Anchorage off North Ubian. Depth 16—23 M. 1 specimen.

Two specimens were collected; at Stat. 96 an incomplete one, a female and at Stat. 99 a small specimen with regenerated tail, measuring 15 mm. in length. The species can easily be recognized by its dead-white elytra and the composition of its neuropodial fascicles, that contain in their dorsal part simple, spinous setae only, whereas the compound mid-ventral bristles have a very short appendix. The scales cover the whole dorsum and are overlapping each other; the anterior pair of them are oval, covered over their surface and allround with long cylindrical papillae. The remaining ones (Pl. XXIII, fig. 2) are reniform; their concave, anterior border is smooth, but the posterior border as well as the surface is beset with papillae, that have the appearance of cylindrical spines. Along the exterior border of the elytra there occur a dozen of digitiform papillae, with a broad base, while between them small cup-shaped papillae are situated. The prostomium (Pl. XXII, fig. 8) is rounded, somewhat more broad than long, with conspicuous black eyes, the left anterior one however being absent. From the middle of its dorsum the tentacle arises with a basal joint, furnished on each side with a long, triangular ctenidium; the conical distal joint is only a little longer than the basal one, nearly as long as the dorsal tentacular cirrus.

In a typical foot (Pl. XXIII, fig. 1) the notopodium is much smaller than the neuropodium, club-shaped, with four stylodes at its distal extremity and three ctenidia along its dorsal side; the notopodial bristles are of the usual shape. The neuropodium is high, rounded triangular, with several short stylodes along its margin; its bristle-fascicle consists of: (1) a dorsal part, containing only simple setae with spirally arranged, pectinate whorls below the tip, (2) a central part of stout compound bristles, with a simple short bifid appendix (Pl. XXII, fig. 9), while in the ventral part these appendices are slender and multi-articulate. The ventral cirrus, that extends nearly to the extremity of the foot, has a short appendix at its base, whereas a stylode is situated behind the cirrus.

4. *Sthenelais heterochela* n. sp. Pl. XXIII, figs. 3—6.

Stat. 193. Sanana Bay, East-coast of Sula Besi. Depth 22 M. 1 specimen.

At this Station the anterior fragment of a female *Sthenelais* was collected, that cannot be identified with one of the species hitherto described, on account of the characteristical feature of the cheliform process of its neuropodial setae. The prostomium (Pl. XXIII, fig. 4) is transversely elliptical, with two pairs of conspicuous eyes. From the middle of its dorsum the tentacle arises with a basal part, that is transversely grooved and provided on each side with a large foliaceous ctenidium; its distal joint is long, tapering, nearly extending to the extremity of the dorsal tentacular cirrus. The lateral antennae are short and conical. The palps are not

very long. Of the tentacular cirri the ventral one does hardly reach to half the length of the dorsal cirrus. The scales (Pl. XXIII, fig. 3) are overlapping each other and cover the dorsum totally; they are reniform, with the scar of attachment nearly in the centre and a small nerve-ganglion situated next to it. Their surface is smooth except an area along their anterior and internal border, that is covered with small globular tubercles; the external margin bears some slender papillae. The anterior scales are elliptical, with a smooth surface; their margin, except a small part of the external border, is ciliated. In a typical foot (Pl. XXIII, fig. 5) the notopodium is club-shaped, with two short stylodes in its ventral part; it contains the usual whorled setae. The neuropodium possesses two stylodes on its dorsal border and another pair at the distal end of its ventral side; moreover near the base of the ventral cirrus there occur three long stylodes. The neuropodial bristles (Pl. XXIII, fig. 6) are characterized by the inequality of the limbs of their cheliform appendix, which consists of one short limb, hook-like bent, and an other one nearly thrice as long, straight and tapering distally. There are no multi-articulate compound bristles. In the dorsal part of the neuropodial fascicle simple spinose as well as compound bristles occur; the species therefore belongs to the second group of Potts.

5. *Sthenelais malayana* n. sp. Pl. XXIII, figs. 7—9.

Stat. 114. 0° 58′.5 Lat. N., 122° 55′ Long. E. Kwandang Bay entrance (North Celebes). Depth 75 M. 1 specimen.

At the above-named Station the anterior fragment of a rather large worm was dredged, that cannot be identified with one of the preceding species. It consists of 28 segments and it measures 23 mm. in length and 7 mm. in breadth; its scales are pale red coloured, whereas the bristles are golden-yellow. The prostomium is broad, heart-shaped; from the anterior part of its median dorsal line the tentacle arises with a basal joint, that is transversely wrinkled and bears on each side a wing-like ctenidium, that extends along its total length. Its distal part is rather long and tapering and extends to about half the length of the dorsal tentacular cirrus. The lateral antennae could not be observed, because of all the organs of the anterior body-region being densely covered with parasitical animals (? rotatoria). At a short distance behind the tentacle, on the middle of the head a pair of small eyes is visible. The periphery of the mouth is provided with strong, longitudinal folds. The first parapodium bears two tentacular cirri, much differing in length; the ventral cirrus measures about a fourth of the dorsal one. The ventral cirrus of the second parapodium is very long; it arises from the base of the neuropodium and extends beyond its distal extremity. In the succeeding segments the ventral cirrus is inserted in the middle of the ventral side of the parapodium and hardly reaches to its distal end. The elytra (Pl. XXIII, fig. 7) are overlapping each other in the median dorsal line and cover the whole dorsum; they are reniform with the elliptical scar of attachment situated in the centre. Their surface is densely covered with small, roundish, orange-coloured tubercles; their margin is smooth, except at the external side, that is beset with filiform papillae. In a typical foot (Pl. XXIII, fig. 8) the notopodium is nearly cylindrical and extends somewhat beyond the distal extremity of the neuropodium; it bears at the end of its ventral border 3 or 4 short, conical stylodes

and is provided with a stout fascicle of upward bent bristles. In the neuropodium, that has a triangular border, there is a dorsal group of simple setae, whorled below the tip and some compound bristles (Pl. XXIII, fig. 9) with a smooth shaft and a slender, multi-articulated appendix, that ends in a thin, bifurcated tip; ventrally of these there occur three other setae with a single-jointed appendix. The ventral part of this fascicle consists only of slender bristles, with a multi-articulated appendix.

Genus **Leanira** Kinberg[1]).

Prostomium with a single median antenna (tentacle), usually with ctenidia at its basal joint; lateral antennae fused with the first parapodia. Parapodial and buccal ctenidia as well as stylodes present. No dorsal cirrus on the third segment. Dorsal bristles simple, slender, with spirally arranged, denticulated whorls; setae of the ventral fascicle compound with pectinate-canaliculate appendix, in some species however in its upper part some simple bristles, with spinous whorls below the tip. Papillae of the proboscis $^{11}/_{11}$.

Willey in 1905 has united under the name of *Sthenolepis*[2]) those *Leanira*-species, that are characterised "by the presence of a long tentaculum impar born upon a ceratophore, which is provided with a pair of spatulate appendages", suggesting that the true *Leanira*-species were distinguished "by the presence of a very small tentaculum impar inserted directly upon the prostomium, not born upon a ceratophore." This suggestion, in my opinion, is not correct, for Ehlers says about *L. hystricis*[3]), that the tentacle emerges from the middle of the cephalic lobe and consists of a cylindrical basal joint and a slender terminal part; also *L. tetragona* (Oerst.)[4]) one of the first described species of *Leanira* shows a tentacle with a conspicuous ceratophore and with ctenidia. Therefore I think that it is not allowed to divide the species of *Leanira* in two groups on account of the length of the tentacle and of the absence or presence of antennal ctenidia.

1. *Leanira sibogae* n. sp. Pl. XXIV, figs. 1—3.

Stat. 4. 7°42′ Lat.S., 114°12′.6 Long. E. Anchorage of Djangkar (Java). Depth 9 M. 5 specimens.
Stat. 19. Bay of Labuan Tring, West coast of Lombok. Depth 18—27 M. 2 specimens.
Stat. 47. Bay of Bima. Depth 55 M. 1 specimen.
Stat. 51. Molo Strait. Depth from 69 to 91 M. 7 specimens.
Stat. 213. Saleyer Anchorage. Depth up to 36 M. 3 incomplete specimens.
Stat. 313. Anchorage East of Dangar Besar, Saleh Bay (Celebes). Depth up to 36 M. 1 specimen.

At the above-named Stations specimens of a *Leanira*-species were dredged, that could not be identified with one of the known species. The longest of them, a female, measures 50 mm. in length and has about 100 segments. The smallest has only a length of 8 mm. and consists of about 50 segments. They are pale red coloured, especially along the posterior and

1) Loc. cit. p. 30.
2) Loc. cit. p. 259.
3) Z. W. Z. Bd. XXV, 1874, p. 35, Pl. II, figs. 5—11.
4) Malmgren, Nordiska Hafs-annulater, p. 88, Pl. XI, fig. 14.

internal margin of the elytra; the bristles have a brownish yellow hue. On the anterior segments the elytra are somewhat diverging and do not cover the dorsum, that is transversely folded. The first pair of elytra, that overhang the cephalic lobe, are oval, areolate, without papillae, with a smooth, light-coloured border and an eccentrical scar of attachment; the elytra, situated more posteriorly, are more elongated, heart-shaped. In *Leanira magellanica* Mc Int. the scales are studded with papillae, whereas in *L. areolata* Mc Int. they have a ciliated margin in the region behind the anterior third of the body. From the median part of the prostomium (Pl. XXIV, fig. 3) the short, basal joint of the tentacle arises, that is somewhat enlarged in its inferior part and furnished laterally with two rather large wing-like ctenidia. The tentacle, tapering distally, is nearly as long as the longest tentacular cirrus; on each side of its base a conspicuous black eye is visible, whereas more anteriorly another smaller one is situated, that lies hidden under the tentacular-ctenidium. In *L. magellanica* as well as in *L. areolata* the eyes appear to be totally absent, whereas in *L. japonica* Mc Int. there is a pale band behind each eye. The palps bent downward and backward reach the 18th segment.

The buccal parapodium (Pl. XXIV, fig. 1) shows an obvious difference in length between the ventral and the dorsal tentacular cirrus, the last named having about ten times the length of the first one; at the base of each of them a fascicle of capillary bristles emerges. In the dorsal fascicle, that is furnished with an acicula, the setae are smooth, faintly denticulated or whorled and extend nearly to the extremity of the longest cirrus; those of the ventral fascicle are shorter, smooth. With the internal side of the base of this segment the short lateral antenna is coalesced and four digitiform stylodes arise above its basal joint. At the ventral side and externally, near the base of the ventral tentacular cirrus, two buccal-ctenidia (Pruvot et Racovitza) are situated, the internal one (cuilleron céphalique Clap.) somewhat tongue-shaped, the other one (lamella praebuccalis Ehl.) ear-like twisted. The second segment has a short elytrophore and there are no ctenidia visible on its dorsum. The notopodium and neuropodium are faintly separated from each other; the notopodium is obtuse, rounded, with about a dozen of digitiform stylodes on its circumference. The neuropodium is somewhat more prominent and is furnished at its superior and inferior extremity with four stylodes, whereas in the middle of its external border three of them are visible; along the ventral border a row of cylindrical glands occurs. Its ventral cirrus is rather long and somewhat extends beyond the distal extremity of the foot. The third segment shows no trace of a dorsal appendix; this is a remarquable fact, because in *L. japonica* this segment as well by Mc Intosh as by Izuka is figured with dorsal cirri and in *L. magellanica* and in *L. areolata* also long dorsal cirri are present. In the notopodium the number of stylodes is much decreased and reduced to four (two dorsal and two ventral ones); the neuropodium much resembles that of the second segment. The first branchial appendix occurs on the sixth segment.

A foot of the middle of the body (Pl. XXIV, fig. 2) shows both branches more pointed and furnished with several stylodes, among these a long one at the tip of the notopodium; there is a long branchial appendix at the elytrophore and the dorsum of the notopodium possesses three ctenidia, situated close to each other. The ventral cirrus extends to about half the length of the neuropodium and suddenly becomes very slender at a short distance of its distal extremity.

In the specimen of Stat. 313 I observed in the dorsal part of the neuropodial fascicle some simple bristles, spirally whorled beneath the tip.

2. *Leanira tentaculata* n. sp. Pl. XXIV, figs. 4 and 5.

Stat. 319. 6° 16'.5 Lat. S., 114° 37' Long. E. Java Sea. Depth 82 M. 3 specimens.
Stat. 320. 6° 5' Lat. S., 114° 7' Long E. Java Sea. Depth 82 M. 2 specimens.

At these Stations five incomplete specimens were dredged, that though much resembling *L. sibogae* especially by the long tentacle, cannot be identified with this species as they differ in many other respects. The prostomium (Pl. XXIV, fig. 4) is transversely elliptical, and provided with two pairs of eyes. From the median dorsal line of its anterior half the tentacle arises with a short basal joint, that bears on each side a small auriculate ctenidium, that is too minute to hide the large frontal eye. The distal joint of the tentacle is enormously long and bent backward extends to the 12th segment. The lateral antennae, coalesced with the buccal segment, are short and consist of two joints, nearly equal in length. The palps are long and tapering; they exceed the tentacle somewhat in length. Like in *L. sibogae* both tentacular cirri differ much in length; the dorsal one is about half as long as the tentacle, whereas the ventral cirrus measures about a fifth of the dorsal one. The elytra are heart-shaped, with their broadest side turned laterally; their scar of attachment lies somewhat eccentrically and next to it a brownish nerve-ganglion is situated. The elytra nearly reach each other, only behind the 10th segment a narrow median area of the dorsum remains uncovered. The parapodia are especially characterized by the presence in the dorsal part of the neuropodial fascicle of simple bristles, that have spirally arranged whorls below the tip. The 22d foot (Pl. XXIV, fig. 5) has a cylindrical notopodium with its distal border slightly emarginated; its ventral lobe bears two slender stylodes, a longer and a shorter one, whereas seven or eight stylodes are inserted on its dorsal part. The neuropodium has a triangular margin and bears in its dorsal part four stylodes, whereas ventrally two only are present. The ventral cirrus, that extends nearly to the distal extremity of the foot, has a dorsal tubercle at a short distance from its base. In the segments, situated more posteriorly, the number of stylodes in the neuropodium increases. The first branchial process occurs on the 11th segment. *L. tentaculata* differs from *L. sibogae* by the presence of simple spirally-whorled bristles in the dorsal part of the neuropodial fascicle, by its longer tentacle, with a pair of smaller ctenidia and by its shorter dorsal tentacular cirri.

3. *Leanira javanica* n. sp. Pl. XXV, figs. 1—4.

Stat. 5. 7° 46' Lat. S., 114° 30'.5 Long E., off North-coast of Java. Depth 330 M. 1 specimen.

Among the fragments of *Lean. coeca* I met with the anterior portion of an other smaller *Leanira*-species, that could not be identified with one of the species of this genus, hitherto known. The prostomium (Pl. XXV, fig. 1) is transversely elliptical without eyes; from its median dorsal line the tentacle arises, with a short basal joint, that bears two small elliptical ctenidia. The distal part of the tentacle is long and slender, tapering, nearly as long as the dorsal ten-

tacular cirrus. The lateral antennae are rather long, somewhat longer than the head. The palpi are stout and long; they extend about to the 10th segment. The scales (Pl. XXV, fig. 2) are reniform, translucent, with the scar of attachment situated nearly in the centre, a little laterally; their surface is densely covered with minute spines, except an anterior and exterior area, that are nearly barren. Moreover there occur along the outer border some slender digitiform papillae. The buccal segment bears two tentacular cirri of different length, the ventral one measuring about a fifth of the dorsal cirrus. The second segment has a rather long and slender ventral cirrus; however it does not extend beyond the distal extremity of the foot. The first branchial process occurs on the 5th parapodium. The parapodia (Pl. XXV, fig. 3) are characterized by the scarcity of stylodes; in the 19th segment f. i. the cylindrical notopodium bears only two short oval stylodes at its distal extremity. Its fascicle contains a dorsal group of stout whorled bristles and a ventral one of smooth capillary setae; the neuropodium is triangular, with a short conical stylode at its dorsal and its ventral side. The dorsal neuropodial setae (Pl. XXV, fig. 4) have denticulated whorls at the distal end of their shaft. The three parapodial ctenidia are present, the inferior being cup-shaped.

4. *Leanira vulturis* n. sp.[1]). Pl. XXV, figs. 5—7.

Stat. 1. 7° 27'.5 Lat. S., 113° 8'.5 Long. E. Madura Strait. Depth 37 M. 1 incomplete specimen.
Stat. 2. 7° 25' Lat. S., 113° 16' Long E. Madura Strait. Depth 56 M. 2 incomplete specimens.
Stat. 47. Bay of Bima. Depth 55 M. 4 incomplete specimens.
Strait of Makassar, 3° 30' Lat. S., 116° 33' Long. E. Depth 30.6 M. P. N. VAN KAMPEN. 1 specimen.

Only the specimen, captured in Strait Makassar, is complete, measuring 80 mm. in length. The elytra leave the median region of the dorsum uncovered, except in the anterior segments, where they meet each other; they are translucent, granulated, without papillae, with the scar of attachment in the centre. They have a rounded rectangular shape, transversely elongated; their anterior and internal margin is somewhat concave, whereas the external border is notched like in *Eulepis*. The prostomium (Pl. XXV, fig. 7) is rounded, about as broad as long, with a pair of conspicuous eyes just on its anterior margin and another pair, provided with a lens, situated more posteriorly, somewhat in front of the median region of the head. From this region the median antenna (tentacle) arises, that consists of a rather long, cylindrical basal part (ceratophore) and two short, subulate joints, separated from each other by a rather deep constriction, quite like in *Lean. hystricis*, as figured by EHLERS[2]); in our species however the distal end of the ceratophore shows a pair of oval, leaf-like ctenidia, as in *Lean. tetragona*. The lateral antennae, coalesced with the buccal segment, have the same appearance as the median one and consists of two joints, a broad basal and a subulate terminal one. The dorsal tentacular cirrus is not quite as long as half the length of the palps; the ventral one is very short and does not extend beyond the basal joint of the dorsal one. The bristles of the buccal segment nearly reach the distal end of the dorsal tentacular cirrus.

1) Named after „de Gier", the vessel, that Mr. VAN KAMPEN used for his dredgings.
2) Loc. cit. pl. II, fig. 5.

The second segment has a globular dorsal lobe, with about a dozen of rather long stylodes, emerging from its semilunar margin; its ventral lobe is triangular with a group of four rather long stylodes inserted near its extremity, whereas five shorter ones arise from the dorsal and three others from the ventral side. The ventral cirrus of this segment is thick and stout, not quite as long as the foot.

In the third segment the dorsal cirrus is absent, like as in *Lean. sibogae*; its notopodium is a short cylinder, with five digitiform stylodes along its border. Its neuropodium is much broader, rounded, with two stylodes in the middle of its anterior side, whereas the posterior lip is deeply emarginated; in the upper part of this lobe eight stylodes occur, while the inferior part bears four of them. The ventral cirrus is short, swollen in its inferior part and slender distally; it does not reach the extremity of the foot. The neuropodial fascicle contains only pectinate-canaliculate setae. In the 10th segment (Pl. XXV, fig. 5) the central of the notopodial stylodes is strongly elongated, extending almost to half the length of the bristles; the neuropodium has some of the stylodes enormously enlarged. In the upper part of the neuropodial fascicle a single bristle with spirally arranged whorls is visible. The first branchial appendix of the elytrophores occurs on the 13th segment. In the segments situated more backward (Pl. XXV, fig. 6) the notopodium shows on its posterior side three short stylodes, whereas the neuropodium at its upper corner only has a single one, that is much longer and slender. The notopodium has the shape of a truncated cone and is furnished in the centre of its distal extremity with a long digitiform stylode, whereas on its anterior border there is a great number of shorter ones (at least a dozen); the setae have the usual shape. The neuropodium, at least twice as broad as the notopodium, bears in the upper and inferior part of its anterior side half a dozen of stylodes; its ventral cirrus does not reach quite to the extremity of the foot and bears at its base a short hook-like appendix. There is also a cylindrical stylode medially from the base of the ventral cirrus. The neuropodial fascicle has in its upper part four of the spirally-whorled bristles, first observed by Mc Intosh in *Lean. japonica*.

This species is easily distinguished from the preceding one by its much shorter tentacle and the first branchial appendix situated on the 13th segment.

5. *Leanira melanocephala* n. sp. Pl. XXVI, figs. 1—4.

Stat. 51. Molo Strait. Depth from 69 to 91 M. 2 specimens.

Among the specimens of *Lean. sibogae*, from the above-named Station, I met with two incomplete individuals of another small species, characterized by the presence of a short tentacle like in *Lean. Quatrefagesi*, *Lean. hystricis* and *Lean. vulturis*; however they cannot be identified with one of these.

The scales (Pl. XXVI, fig. 2) besides those of the first pair, which are roundish, have the shape of a paralellogram with rounded corners; they are finely granular, with a blackish pigment, and have the scar of attachment situated nearly in the centre and next to it a large nerve-ganglion, from which several nerve-branches radiate. The prostomium (Pl. XXVI, fig. 1) is semi-circular, darkly pigmented, with two pairs of conspicuous eyes. From the middle of its

dorsum a short tentacle arises, nearly as long as the head; it consists of a short, cylindrical basal joint, provided on each side with a wing-like ctenidium, and of a slender tapering terminal joint. The lateral antennae, fused with the buccal segment, are not quite as long as the basal joint of the dorsal tentacular cirrus. Both tentacular cirri differ much in length; the dorsal one is not quite as long as half the length of the palps and the ventral one is only somewhat longer than the basal joint of the first. The palps are very long; bent downward and backward they reach the 12th segment. The first branchial appendix occurs on the elytrophore of the 5th segment. The third segment (Pl. XXVI, fig. 3) has no dorsal cirrus; its discoidal notopodium bears only a single, short, digitiform stylode, situated above the bristle-fascicle. Its neuropodium is much higher, rounded triangular, and provided in the middle of its distal extremity with two short, oval stylodes; ventrally there occur two long, cylindrical stylodes, emerging from a common base, while dorsally five other stylodes are connected with a short appendix. The ventral cirrus of the third segment is furnished with a terminal joint and reaches nearly the distal extremity of the parapodium. In the segments (Pl. XXVI, fig. 4) situated more posteriorly (f. i. the 9th) the notopodial stylode is somewhat increased in length; in the neuropodium the two central stylodes have disappeared, whereas of the two ventral ones only a single one remained and the dorsal stylodes became shorter and thicker. In the neuropodial briste-fascicle there are no simple spirally-whorled bristles visible.

This species can easily be distinguished from *Lean. vulturis* by the shape of the scales, the situation of the first branchial appendix and by the structure of the parapodia; it differs from *Lean. Quatrefagesi* and *Lean. hystricis* by the presence of antennal ctenidia.

6. *Leanira coeca* n. sp. Pl. XXVI, figs. 5—7.

Stat. 5. 7° 46′ Lat. S., 114° 30′.5 Long. E. Depth 330 M. 1 incomplete specimen.
Stat. 178. 2° 40′ Lat. S., 128° 37′.5 Long. E. Depth 835 M. 1 incomplete specimen.
Stat. 211. 5° 40′.7 Lat. S., 126° 45′.5 Long. E. Depth 1158 M. 1 incomplete specimen.
Stat. 271. 5° 46′.7 Lat. S., 134° 0′ Long E. Arafura Sea. Depth 1788 M. 15 specimens.
Stat. 314. 7° 36′ Lat. S., 117° 30′.8 Long. E., off Paternoster Islands. Depth 694 M. 3 specimens.

Of this species several incomplete specimens were collected; those of Station 271 are in an indifferent state of preservation. It is a deep-water species like *Lean. hystricis* Ehl.[1]) and much resembling it; however I do not believe, that they are identical. The prostomium (Pl. XXVI, fig. 5) has the shape of a reversed trapezium, nearly as long as broad; its anterior margin is rounded. From its median dorsal line a short tentacle arises, not much longer than the head, consisting of a rather long basal joint and two shorter distal ones, separated by a constriction. There are neither antennal ctenidia nor eyes, like in *L. hystricis*. The lateral antennae (*Fühler-cirrus* Ehl.) are coalesced with the internal side of the basal part of the first segment, that has a triangular appearance; they consist of a rather slender basal joint and two dilated distal ones. Both tentacular cirri differ much in length; the ventral one measures about half the length of the dorsal cirrus. The palps are very long; bent backward they reach the 12th segment. At their base they are surrounded by large buccal ctenidia. The elytra are roundish,

1) l.oc. cit.

smooth, whitish, with the scar of attachment situated somewhat eccentrically and a brownish nerve-ganglion next to it; they leave the median region of the dorsum barren. The 2nd segment (Pl. XXVI, fig. 6) has a semilunar notopodium, from whose dorsal part two stylodes, different in length, are arising; its neuropodium is much larger, obtuse conical, with two slender stylodes at the dorsal part of its edge, whereas another long stylode arises from its posterior side. Its posterior lip has a rather deep incision and bears at its ventral part two short stylodes; the ventral cirrus is short and dilated, not reaching the distal extremity of the foot. This is a characteristic difference with other *Leanira*-species, in which the ventral cirrus of the second segment is always longer than in the succeeding segments and extends beyond the extremity of the foot. To begin with the 20th segment a conical (branchial?) appendix occurs; this appendix gradually increases in length in the succeeding segments. It does not bear cilia as in other Sigalionidae, and also the ciliated ctenidia of the parapodia are wanting here. In the 12th segment (Pl. XXVI, fig. 7) the cylindrical notopodium, that extends somewhat beyond the neuropodium, bears three stylodes, ventrally a long, digitiform one and dorsally two shorter ones; the neuropodium is much higher and is provided in its dorsal part with several club-shaped stylodes, containing large transparent cells, while ventrally only a single short stylode occurs. The ventral cirrus does not reach beyond half the length of the foot. The bristles have the usual shape; however the neuropodial fascicle does not contain spirally-whorled bristles. In the succeeding segments the number of stylodes increases as well in the dorsal as in the ventral lobe of the feet and also the branchial appendix and the elytrophore grow longer.

7. *Leanira* sp. Pl. XXVI, fig. 8.

Stat. 33. Bay of Pidjot, East coast of Lombok. Depth up to 22 M. 1 specimen.

At the above-named Station an anterior fragment of a *Leanira*-specimen was collected, that, though agreeing with *L. sibogae* in the large dimension of the antennal ctenidia, differs from this species in several other characters. The head is rounded, nearly as long as broad, with a shallow median groove, from which the basal joint of the tentacle arises, that is provided on each side with a large, ear-shaped ctenidium, hiding the anterior pair of eyes, the posterior pair being visible behind the base of the tentacle. The tentacle has a long distal part, that has about four-times the length of the head, and extends somewhat beyond the extremity of the dorsal tentacular cirrus; the ventral tentacular cirrus is much shorter, measuring about a third of the length of the dorsal one. The palps are rather long; bent backward they reach the 10th segment. The first branchial appendix occurs on the third segment. The scales are heart-shaped, granulated, with the scar of attachment situated nearly in the centre. A typical foot (22nd) has a cylindrical notopodium, that bears at the extremity of its ventral border a rather long, digitiform stylode, whereas its posterior lip is provided with some short, blunt, conical stylodes; the neuropodium has an obtuse triangular border and bears superiorly four cylindrical stylodes, whereas inferiorly there occurs a long and a short one. The dorsal part of the neuropodial fascicle is provided with a couple of simple bristles, whorled beneath the tip.

8. *Leanira* sp.

Stat. 311. Sapeh Bay, East coast of Sumbawa. Reef. 1 specimen.

Two fragments of a *Leanira*-species, too incomplete for a satisfactory identification.

9. *Leanira* sp.

Stat. 321. 6° 5'.5 Lat. S., 113° 30' Long. E. Java Sea. Depth 82 M. 1 specimen.

Two fragments of a *Leanira*-species, too incomplete to be duly identified.

10. *Leanira* sp.

Stat. 167. 2° 35'.5 Lat. S., 131° 26'.2 Long. E. West off New Guinea. Depth 95 M. 1 specimen.

A single specimen, too indifferently preserved for a satisfactory identification and description.

Genus **Euleanira** Horst.

HORST, Zool. Mededeel. R. Museum Nat. Historie, Leiden, vol. II, 1916, p. 12.

Prostomium with a single median antenna (tentacle), with ctenidia at its basal joint; lateral antennae fused with the first parapodia. Four eyes. Parapodia furnished with ctenidia and papillae; no dorsal cirrus on the third segment. Notopodial bristles simple, capillary, with denticulated whorls; neuropodial setae compound, with a simple, knife- or sickle-shaped appendix.

1. *Euleanira ehlersi* Horst. Pl. XXVII, figs. 1—5.

Stat. 2. 7° 25' Lat. S., 113° 16' Long. E. Madura Strait. Depth 56 M. 3 specimens.

At the above-named Station a small worm was dredged, belonging to the sub-family of *Sigalioninae*; however, in my opinion, it cannot be ranged among one of the genera, hitherto described. It is closely allied to the genera *Leanira* and *Psammolyce*, but it shows characters, that assign an intermediate position between both. All the three specimens are incomplete. Only one possesses all its segments, but it lacks the palps as well as the scales. This worm has a length of about 15 mm., and the number of its segments amounts to 65. Besides this complete specimen there is an anterior fragment, long 8 mm., consisting of 23 segments and an other one with 20 segments and a regenerated caudal region. The head (Pl. XXVII, fig. 1) is rounded, nearly as long as broad, provided with two pairs of semilunar eyes, situated closely behind its frontal border; the anterior eyes are somewhat larger than the posterior ones. Between the eyes the tentacle arises with a short basal joint, provided with two small auriculate ctenidia; its distal part measures about one and a half the length of the head. The buccal segment bears two tentacular cirri, the dorsal one being a third longer than the tentacle, whereas the ventral cirrus is a third shorter than the dorsal one. At the innerside of the basal part of the tentacular cirri a short, digitiform appendage is situated, that presumably represents the lateral antenna. The palps are long and slender, smooth, tapering distally, about three or four times longer than

the tentacular cirri. The scales (Pl. XXVII, fig. 2) have a rounded trapezoidal shape, with a sinuated external border, the scar of attachment lying in the centre; they are translucent, whereas a broad, semilunar, brown-red spot, consisting of large polygonal cells, occurs on their internal half. A typical foot (15th) consists of a large, cylindrical neuropodium, provided with a rounded anterior and posterior lip; the first-named is somewhat narrower than the last one (Pl. XXVII, fig. 3). Between them a fascicle of setae emerges, that consists of a long, smooth shaft and a short, knife-shaped appendix, the internal cavity of which appears to be divided into two compartments by a transverse septum (Pl. XXVII, fig. 4*a*); however in the dorsal and ventral part of the fascicle some of the setae have a cylindrical appendix, with an obtuse, club-shaped end, whereas their shaft bears a couple of denticulated rows near its distal extremity (Pl. XXVII, fig. 4*b*). In the anterior segments (2nd, 3rd and 4th) this appendix of the setae is longer and more slender; even in the dorsal and ventral part of the fascicle it is curved, sickle-shaped, resembling the neuropodial bristles of the 2nd parapodium of *Psammolyce flava*, whereas 5 or 6 denticulated rows occur at the distal end of their shaft (Pl. XXVII, fig. 5). No stylodes are present, but some cylindrical papillae, as in *Psammolyce*, occur along the border of the foot. Especially in the third segment they are rather numerous. The notopodium of the foot is small, papilliform and shows a fascicle of fine, capillary setae, provided with spirally arranged whorls; on its dorsum there occurs a single cushion-shaped ctenidium. A slender ventral cirrus, showing a constriction at a short distance from its end, does not reach to the extremity of the foot. In the anterior segments the ventral cirrus is longer and more slender, extending to or beyond the distal end of the foot. A small, triangular, branchial appendix is at first visible on the 3rd segment.

I do not hesitate to propose a new genus for this worm; for it cannot be ranged among *Psammolyce*, that is characterized by the presence of cheliform bristles, a long dorsal cirrus on the 3rd segment and by the absence of ctenidia, nor among *Leanira*, that possesses pectinate-canaliculate setae and stylodes.

Genus **Psammolyce** Kinberg[1]).

Prostomium with a single median antenna (tentacle); lateral antennae fused with the first parapodia. Four eyes. A dorsal cirrus on the third segment. Elytra and median part of the back covered with papillae, adapted for the retention of small particles of the bottom. Neither ctenidia nor stylodes on the parapodia. Notopodial bristles simple, capillary, with denticulated whorls; neuropodial setae compound, with a simple cheliform appendix. Papillae of the proboscis $^{11}/_{11}$.

1. *Psammolyce zeylanica* Willey. Pl. XXVII, figs. 6—8.

Willey, loc. cit. p. 255, Plts. I and II, figs. 33—43.
Horst, on malayan species of the genus Psammolyce, Notes Leyden Museum, vol. XXXV, 1913, p. 186.

Stat. 37. Sailus Ketjil, Paternoster Islands, Depth up to 27 M. 1 incomplete specimen.

1) Loc. cit. p. 31.

Stat. 43. Anchorage off Pulu Sarassa, Postillon Islands. Depth up to 36 M. 1 female specimen.
Stat. 49a. 8° 23'.5 Lat. S., 119° 4'.6 Long. E. Sapeh Strait. Depth 69 M. 1 specimen.
Stat. 114. 0° 58'.5 Lat. N., 122° 55' Long. E., Kwandang Bay entrance (North-Celebes). Depth 75 M. 3 specimens.
Stat. 133. Anchorage off Lirung, Salibabu Island. Depth up to 36 M. 1 specimen.
Stat. 231. Ambon Anchorage. Reef. 1 specimen.
Stat. 240. Banda Anchorage. Depth from 9—45 M. 3 specimens.
Stat. 313. Anchorage east of Dangar besar, Saleh Bay. Depth up to 36 M. 1 specimen.

At the above-named Stations individuals of a *Psammolyce*-species were met with, that belong to the group of *Ps. arenosa* D. Ch.[1]) and in many regards agree with WILLEY's description of *Ps. zeylanica*, though some slight differences could be stated. The largest specimen (of Stat. Ambon) measures about 100 mm. in length and its greatest breadth (with bristles) amounts to 12 mm. Usually the ventral side of the body is hairy, though not more conspicuously in the vicinity of the mouth, as f. i. is to be seen in *Ps. malayana* (see later on); even in the specimens of Stat. Banda the anterior region of the venter shows so few filiform papillae, except at the base of the parapodia, that with regard to this character the specimens more resemble *Ps. rigida* Gr. (WILLEY, loc. cit. p. 256). Examined with high power the venter appears to be coated with long, pointed, somewhat spinous processes, that are dilated at the base, whereas small globular tubercles are situated between them. The first pair of elytra is elongated, rounded triangular, with the internal border nearly straight; posteriorly the elytra become notched and lobed, especially at the median side. Usually two lobes occur at the internal corner and a large tubercle at the posterior margin. The anterior border of the elytra is smooth, but along the posterior margin long filiform papillae are situated; on the external border these are separated in groups, whereas short, cup-shaped papillae occur in the intervals between them. The scar of insertion is elongated, elliptical. The dorsum between the elytra is beset with rather long filiform papillae, arising from the tip of a short common stem, like in *Ps. arenosa* (St. Joseph, loc. cit. pl. 2, fig. 26). The tentacle of the head has a terminal joint, which is at the most one and a half as long as its basal part, and a trifle shorter than the tentacular cirri, whereas according to WILLEY it should measure thrice its length.

The first parapodium (Pl. XXVII, fig. 7) shows great resemblance with that of *Sthenelais*, as elaborately described and figured by PRUVOT and RACOVITZA[2]); besides the two tentacular cirri, that are nearly of the same length, there occurs above the base of the dorsal one of these (Fig. 7d, *t. c.*), a third cirriform appendix, the lateral antenna (Fig. 7, *l. a.*). This appendix is conical of shape, not quite as long as half the length of a tentacular cirrus and shows near its base a faint constriction as if there exists a basal joint. At the internal side of the parapodium a rounded rectangular praebuccal lamella and a triangular cuilleron céphalique are visible; moreover there are two bristle-fascicles, consisting of simple, capillary setae, whorled and with a faintly curved tip. The dorsal fascicle only is furnished with an acicula.

In the second segment the neuropodial fascicle consists of compound setae with plumose shaft and slender, elongated appendix, with filiform curved apex as figured by WILLEY, (loc.

1) De St. Joseph, Annélides de St. Jean de Luz.; Ann. Sc. nat. Zoologie (S. 9) t. III, 1906, pl. 1.
2) Fauna des Annelides de Banyuls; Arch. de Zool. expériment. (3e S.) vol. III, 1895, p. 455.

cit. fig. 36); however the figure does not show, that they are conspicuously serrated along the inner border. The third segment has a dorsal cirrus with a curved terminal joint, somewhat shorter than its peduncle. In a normal parapodium the central group of ventral bristles have a stout, short appendix, usually not bifurcated and a squamous shaft with semilunar cusp below the apex (WILLEY, loc. cit. pl. II, fig. 43); in some figures however the cusp is absent or faintly developed and the setae more resemble those of *Ps. rigida* (WILLEY, loc. cit. pl. II, fig. 44). The inferior setae of the fascicle are more slender, with an elongated, bifurcated appendix.

2. *Psammolyce flava* Kinberg. Pl. XXVII, figs. 9 and 10.

KINBERG, loc. cit., p. 3, pl. IX, figs. 44, A—H.
HORST, Notes from the Leyden Museum, Vol. XXXV, 1913, p. 189.

Stat. 5. 7°46′ Lat. S., 114°30′.5 Long. E. Anchorage of Djangkar (Java). Depth 330 M. 1 specimen.

A single incomplete specimen, measuring about 50 mm. in length, with 90 segments.

Though *Ps. flava*, according to KINBERG, was found in the Atlantic near Rio Janeiro, I do not hesitate to identify the Siboga-specimen with that species, on account of the characteristic shape of its neuropodial setae (Pl. XXVII, fig. 10). The appendix of those bristles somewhat resembles the bill of a grallatory bird, being long, acuminate, faintly bent, with a median fissure till about the middle of its length; they quite agree with the description and figures of KINBERG, only some transverse ridges on the shaft in the neighbourhood of its distal extremity are not mentioned by him. The joint between the shaft and the appendix is not always very obvious; even in some of the setae it is totally wanting and in that case both are melted together. The appendix in the superior, the inferior and the median bristles of this fascicle does not show such differences in length as in other species of the genus. The neuropodium of the second segment (Pl. XXVII, fig. 9) possesses setae, agreeing with those of the corresponding segment in the preceding species; their shaft, somewhat enlarged in its distal end, bears only a few spinous whorls and the slender appendix is curved like a sickle. Moreover this neuropodium bears at its distal extremity, besides the usual filiform papillae, a long cylindrical appendage, with a club-shaped end. With regard to the prostomium I found in the Siboga-specimen the palpi not so long as figured by KINBERG; they hardly extend beyond the distal extremity of the setae of the buccal segment. The tentacle is absent. KINBERG mentions two large eyes at the base of this organ; he says, they are "parum conspicui", but I could not detect them.

In the anterior segments the ventral side of the body as well as the middle of the dorsum are smooth, without papillae and accordingly the coating with grains of sand is nearly absent. Also the elytra are not so densely covered as usually and their boundaries are more conspicuous; therefore the worm has a less compact appearance and a looser structure, like most of the deep-sea worms. In the posterior part of the body the venter is densely covered with papillae, all of the same length, giving it a verrucous appearance. In the anterior segments the elytra have the anterior border concave and smooth, whereas the remaining part

of the margin is beset with rather long filiform papillae, that also are found on their upper surface. In the segments, that are situated more posteriorly, the anterior border of the elytra is straighter, whereas their median part is lobe-like elongated and a great number of papillae are found on the external part of their surface.

Ps. Kinbergi Hans., also found in the neighbourhood of Rio Janeiro, that I had the opportunity to examine, is quite a different species, allied to *Ps. arenosa* with regard to the appearance of the bristles, of the dorsal cirrus of the third segment etc.; unfortunately the figures, given by HANSEN, are not very accurate.

3. *Psammolyce malayana* Horst. Pl. XXVII, figs. 11—13.

HORST, Notes from the Leyden Museum, Vol. XXXV, 1913, p. 190.

Stat. 81. Pulu Sebangkatan, Borneo Bank. Depth 34 M. 2 incomplete specimens.
Stat. 133. Anchorage off Lirung, Salibabu Island. Depth up to 36 M. 1 incomplete specimen.
Stat. 153. 0° 3'.8 Lat. N., 130° 24'.3 Long. E. Depth 141 M. 1 incomplete specimen.
Stat. 204. 4° 20' Lat. S., 122° 58' Long. E. Buton Strait. Depth from 75 to 94 M. 1 incomplete specimen.
Stat. 313. Anchorage east of Dangar Besar, Saleh Bay. Depth up to 36 M. 1 incomplete specimen.

This worm belongs to those *Psammolyce*-species (like *Ps. fijiensis*[1]) and *Ps. occidentalis*[1]), that have the anterior extremity of the body snout-like elongated, on account of the extraordinary length of the first pair of elytra (Pl. XXVII, fig. 11). The species appears to be very brittle, for only the anterior portion of the body of the various specimens is preserved; perhaps the posterior body-region is buried into the bottom of the sea. The entire dorsum is covered with coarse grains of sand, with the shells of foraminifera, with spicules of Alcyonaria and Sponges and with pieces of the shells of Echinoidea and Molluscs.

The ventral side of the body is hairy, on account of the presence of long, slender papillae, especially in the vicinity of the mouth, that is almost entirely hidden by them. The venter as well as the bristles are of an ochreous hue. The first pair of elytra have an elongated, elliptical shape, with a concave, wing-like lobe at the anterior part of their median border; this lobe excepted the whole margin is beset with filiform papillae. The right elytron of the first pair somewhat overlaps the left one, but they diverge with their anterior part, thus making the tentacle and the bristles of the buccal segment visible. The other scales are semi-circular, with a straight anterior border and a conical lobe at their internal angle; their posterior margin is beset with filiform papillae, that are longest at the external side, where they are separated in 3 or 4 groups by small cup-shaped papillae. The cephalic lobe bears a pair of distinct black eyes on its dorsal side, almost hidden under the nuchal fold and another pair of larger ones beneath it. The tentacle has a distal part, about twice as long as the basal one; its tip is swollen and extends nearly till the extremity of the bristles of the first segment and the tentacular cirri. The basal part is furnished on each side with a small semilunar ring. The palps

1) MC INTOSH, loc. cit. p. 146 and 148, pl. XXII, figs. 4 and 5.

are slender, smooth, tapering distally and extending nearly as far as the bristles of the second segment. The neuropodium of the second segment has a club-shaped prolongation; its bristles are articulated, with a very slender process with curved tip. The dorsal cirrus of the third segment has a short basal part and a long whip-shaped terminal portion, that reaches as far as the palp. In the neuropodium of the succeeding feet the central bristles of the fascicle are furnished with a rather long, not stout, bifurcated terminal process; their shaft shows in its distal portion a number of faint transverse ridges. The superior bristles of this fascicle (Pl. XXVII, fig. 13), that bear a more slender appendix, have the shaft furnished with obvious transverse ridges, which are very faintly developed in the slender inferior bristles (Pl. XXVII, fig. 12).

In the specimen of Station 81 nearly all the bristles of the neuropodial fascicle are provided with strong transverse ridges on the shaft. The snout-like elongation of the anterior scales of this specimen was not very conspicuous; for the right anterior elytron, probably having been lost and afterwards regenerated, was covered with some large, irregular lamellae of lime in stead of with the fine regular coating of the remaining part of the body.

Though undoubtly closely allied to *Ps. fijiensis*, the Siboga-specimens could not be identified with that species, on account of the swollen tip of the tentacle and the tentacular cirri, of the whip-shaped terminal appendix of the dorsal cirrus of the third segment and the different structure of the bristles, their shaft being furnished with prominent, transverse ridges.

Sub-family Eulepidinae.

Body rather elongated. Head eyeless; three antennae, the lateral ones arising quite next to each other in the middle of the front. Scales 12 pairs (15 pairs Mc Intosh), situated on segments 2, 4, 5, 7, 9 .... 21 and 24. Elytrophores and branchial cirri arising next to the median dorsal line. Stout knee-like bent bristles in the notopodium, commencing in the third segment; in the neuropodium besides the simple winged bristles a single pectinate bristle superiorly.

In my opinion the genus *Eulepis* cannot be ranged among the *Sigalioninae*, as done by Grube, neither among the *Polynoïnae*, as proposed by Augener, but requires the institution of a new sub-family, as already suggested by Mc Intosh[1]) and Darboux[2]). Though allied to the *Sigalioninae* by the branchial character of their dorsal cirri, they are sufficiently distinguished from them by the absence of compound bristles, as well as by the presence of the stout hook-like setae in the notopodial fascicle.

Genus **Eulepis** Grube.

Grube, Annulata Semperiana, p. 51.

Diagnosis of the genus the same as that of the sub-family.

1) Loc. cit. p. 133.
2) Loc cit.

1. *Eulepis malayana* Horst. Pl. XV, figs. 5—7.

HORST, Notes from the Leyden Museum, Vol. XXXV, 1912/13, p. 164.

Stat. 204. 4° 20′ Lat. S., 122° 58′ Long. E. Buton Strait. Depth 75—94 M. 1 specimen.
Stat. 260. 5° 36′.5 Lat. S., 132° 55′.2 Long. E. West off Great Kei Island. Depth 90 M. 1 specimen.

The largest specimen, in an indifferent state of preservation, measures 20 mm. in length and has 37 segments; the other one has a length of only 15 mm., with 34 somites. The head is rounded without eyes; the paired antennae arise as two pointed, wedge-shaped processes, lying closely to each other, from under the front of the head (Pl. XV, fig. 5). The conical tentacle, arising from the middle of the dorsum of the head, scarcely reaches with its tip till half the length of the antennae; the tentacle as well as the antennae bear a dark spot on the middle of the dorsal side. The palps are conical, smooth, nearly twice as long as the antennae and not extending much beyond the tentacular cirri. There are 12 pairs of elytra, whitish, semi-translucent, with a notch in the external margin; the anterior five ones are rounded quadrangular, the others are elongated, extending over more than one segment. The small specimen possesses only 11 pairs of elytra; probably it is not full-grown. The last elytron extends over seven segments and therefore covers a great part of the posterior body-region. The elytra are situated on segments 2, 4, 5, 7, 9 .... 21 and 24, as mentioned by TREADWELL[1]); the posterior elytron therefore is not inserted on the 23rd segment, like in the Polynoïdae, because it is seperated from the foregoing by two branchiae-bearing segments. The long elytrophores as well as the branchial processes are inserted quite next to the median dorsal line. The dorsal appendages of the segments without elytra show more resemblance with the branchial processes of a Sigalionid than with a cirrus, for they have a row of cilia at their ventral side, whereas also one or more groups of cilia are situated opposite on the dorsum of the notopodium (Pl. XV, fig. 6). However the appendage differs from a Sigalion-branchia therein that it consists of a broad basal portion and a narrower, cirrus-like distal part, separated from each other by a septum. In the segments, situated more posteriorly, this cirrus-like part becomes larger and longer. The basal part contains a peritoneal cavity, in which an intestinal coecum enters and also some eggs are visible; its wall agreeing with DUNCKER's description[2]), shows a thin layer of longitudinal muscles and an epidermis-layer, that is very thick at the ventral side of the branchia. At the dorsal side a comb-like ridge is situated, consisting of numerous cells with coarsely-granular contents, presumably of a glandular nature. The distal part consists of large polygonal cells. The third segment has a short, conical dorsal cirrus and is the first segment that shows in its notopodium the stout brown bristles, with the tip bent at a right angle towards the shaft, characteristic for this genus; beneath them is a fascicle of slender, capillary bristles, finely serrated along the edge. The neuropodium contains a fascicle of stout yellow setae, winged along both edges and with a fine capillary tip; the superior of these setae is shorter and pectinated below the tip (Pl. XV, fig. 7). Their comb consists of about a dozen of large teeth, decrea-

1) The Polychaetous Annelids of Porto Rico: Bull. of the U. St. Fish Commission, Vol. XX, Part. 2, 1902, p. 181.
2) Über die Homologie von Cirrus und Elytron bei den Aphroditiden: Zeitschr. f. Wissensch. Zoologie B. LXXXI, 1906, p. 315, Textfigs. 31 and 32.

sing distally in length, and of a great number of small ones. This pectinated bristle was at first observed by Mc Intosh in *Eulepis Wyvillei* and *Eulepis challengeriae*[1]), but overlooked by Grube in *E. hamifera* (as I presume), as well as by Treadwell in *E. splendida* and *E. fimbriata*, for Augener afterwards stated its presence in *E. splendida*[2]). I suppose, that this remarquable bristle has a different shape in the different species of *Eulepis*. In both parts of the parapodium the distal end of the acicula has a particular shape; in the notopodium it is bent like a hook and in the neuropodium it is enlarged to a transverse lamella, like the head of a hammer. Presumably this represents the "auffallendes braunes breites etwas mondförmiges Plättchen" mentioned by Grube on page 53. The ventral cirrus consists of an enlarged, lamellar basal portion and a clavate terminal appendage. The small worm of Station 204 has a long unpaired anal cirrus, extending over five segments.

Of the five described *Eulepis*-species (*E. hamifera* Gr., *E. Wyvillei* Mc Int., *E. challengeriae* Mc Int., *E. fimbriata* Treadw., *E. splendida* Treadw.) four are found in West-Indian waters and *E. hamifera* only was dredged in the neighbourhood of the Malay Archipelago viz. the sea of the Philippines. However I think that the Siboga-species cannot be identified with it; for according to Grube, *E. hamifera* has the surface of the scales densely covered with short papillae, and long ones occur along the exterior and posterior border. The anterior eleven pairs of elytra are situated on segment 2, 4, 5, 7, 9—21; segments 22—27 bear lamellar organs, somewhat resembling elytra, whereas in the posterior body-region all segments should be provided with scales. However I think that only twelve pairs were present; for Grube mentions, that also in *E. hamifera* the twelfth pair of scales are the longest, like in the Siboga-species and in the species described by Treadwell. Mc Intosh believes, that his *E. Wyvillei* has fifteen pairs of scales, but as several of the scales were wanting, this could be a mistake; of *E. challengeriae* only an anterior fragment of the body was at his disposal. Therefore I presume, that the genus *Eulepis* is characterised by the presence of 12 pairs of elytra, the posterior of which is the longest and covers a great part of the body.

Sub-family Acoëtinae.

Body elongate. Proboscis with numerous papillae on the margin, the median dorsal and ventral one of which are tentaculiform; four jaws with a strong apical tooth and several smaller ones on the cutting edge. Eyes on the dorsum or on two lateral or frontal prolongations of the prostomium. Generally three antennae. Elytra on the segments 2, 4, 5, 7, 9 and on every succeeding alternate segment. Bristles simple; a spinning-gland, producing a tuft of long and soft hairs, in the notopodium of the posterior segments (behind the 8th). Two anal cirri.

At the IXth Internat. congress of Zoology, Monaco 1913, Fauvel gave a critical account of this family, with which I can agree very well[3]).

1) Loc. cit. p. 131.
2) Westindische Polychaeten: Bull. Mus. Comp. Zoology, Harvard College, Vol. 43, 1904, p. 128.
3) Sur la classification des Acoëtines.

Genus **Eupolyodontes** Buchanan[1]).

Eye-peduncles large, arising laterally from the base of the prostomium. Median antenna (tentacle) rudimentary, inserted on the nuchal part of the prostomium; lateral antennae arising from under its frontal margin. Parapodia with branchial papillae on the dorsal surface.

1. *Eupolyodontes amboinensis* Malaquin et Dehorne. Pl. XXXVIII, figs. 1—3.
(*Eupolyodontes gulo* Gr.).

Loc. cit. p. 345, Pl. LI, figs. 1, 3 and 4, Pl. LII, figs. 5—11.
MARENZELLER, Polych. des Grundes, 1902, p. 7.
COLLIN, loc. cit. p. 741.

Stat. 231. Ambon Anchorage, reef. 2 incomplete specimens.

Of this huge Annelid, first collected by BEDOT and PICTET in 1890, two incomplete specimens were found; one specimen broken in three fragments, measures 68 cm. in length, and has 330 segments, whereas the other one has a length of 42 cm. and consists of 195 somites. Not much is to be added to the elaborate description by MALAQUIN and DEHORNE of BEDOT's two specimens; however in neither of them the proboscis was everted, as happened to be the case with one of our worms. Thus I could state that it much resembles the proboscis of *Eupolyod.* (*Panthalis*) *mitsukurii,* figured by IZUKA[2]); it shows in the median dorsal and ventral line of the anterior margin a large papilla, measuring 10 mm. in length, rather broad at its base and tapering distally. On the right and left side of each papilla is a row of 18 low, ridge-shaped papillae, much resembling the teeth of a comb. The jaws have behind the strong apical tooth a dozen of small teeth on the cutting edge. GRUBE[3]) also found in *Eupolyod.* (*Polyodontes*) *gulo* "18 kurze, stumpfe, weiche Papillen"; however according to his description there should only be 9 small papillae on each side of the large median one.

With regard to the nature of the small appendix, situated at the posterior margin of the prostomium, I am rather inclined to join the opinion of MARENZELLER[4]), who considers it to represent the median antenna (tentacle) of other Acoëtidae, pushed away by the large lateral eye-peduncles; for MALAQUIN and DEHORNE, who call it a nuchal organ, as did Miss BUCHANAN[5]) before them, have proved indeed, that it receives a nerve from the posterior region of the supra-oesophageal ganglion, but they failed to demonstrate, that it contains the characteristic elements of a nuchal organ, viz. ciliary cells, gland cells etc. The buccal segment does not contain any bristles; a semilunar ridge is visible between the base of the rather short, stout tentacular cirri, that are nearly of the same length. The second parapodium has a small papilliform notopodium, whereas its neuropodium is much larger, compressed in the longitudinal direction, and contains five large spines and ventrally a fascicle of setae serrulatae; its ventral

1) A Polynoid with branchiae (*Eupolyodontes cornishi*): Quart. Journ. of Microsc. Science, Vol. XXXV, 1894, p. 433, Pl. 27.
2) Annotat. Zoolog. japonenses, Vol. V, 1904, p. 23, pl. I.
3) Beschreib. neuer oder wenig bekannten Anneliden, Arch. f. Naturgesch. Jahrg. XXI, 1855, p. 83.
4) Polych. des Grundes, 1902, p. 7.
5) Loc. cit.

cirrus is rather long and projects beyond the distal part of the parapodium. In the succeeding segments the number of spine-like setae (setae aristatae of other Acoëtidae) increases, but they are not always smooth, as figured by MALAQUIN and DEHORNE (fig. 9), but often show a fascicle of short spines beneath the tip, like in those of *Panthalis* a. o., only the arista appears to be absent in *Eupolyodontes* (Pl. XXVIII, fig. 1). In *Eupolyod. mitsukurii* (according to IZUKA) these bristles should have a smooth tip, whereas in *E. cornishii* a row of spines should be visible. The branchiae commence at the dorsal side of the 6th parapodium as a simple, tubular appendix; in the succeeding one, the 7th, there is a couple of them, fixed at the elytrophore. In the 9th parapodium the first spinning-gland appears from under the notopodium, that has acquired the appearance of a fleshy lip; at the same time a couple of pencil-bristles (setae bipennato-penicillatae) becomes visible in the dorsal part of the neuropodium (Pl. XXVIII, fig. 3). They have a very long, narrow shaft, that at some distance from the tip grows somewhat broader and then tapers distally; beneath the tip there is on each side of the shaft a row of long, flat spines, whereas inferiorly there is another group of shorter spines. In the posterior segments these pencil-bristles have a shorter, plumper shape (Pl. XXVIII, fig. 2).

That *Eupolyodontes gulo* (Gr.), from the Red Sea, also should be found in the neighbourhood of Amboina, as stated by MARENZELLER and afterwards by COLLIN, appears somewhat improbable to me; it may be suggested, that both authors overlooked the branchial appendages on the prostomium, that characterized this species, as stated by MALAQUIN and DEHORNE. Neither can I approve FAUVEL's suggestion[1]) that *Eupolyod. mitsukurii* Izuka should be identical with *Eupolyod. gulo* Gr. (*Eupolyod. cornishii* Buch.), because of the great difference in length of the palps in both species.

Genus **Polyodontes** Renieri[2]).

(*Acoëtes* Aud. & Edw.[3]), *Eupompe* Kinberg[4]), *Panthalis* Kinberg[4]), pro parte).

Eye-peduncles (ommatophores) arising from the lateral frontal corner of the prostomium. Median antenna (tentacle) inserted in the dorsal median line of the prostomium; lateral antennae arising from the underside of the ommatophores. Parapodia with branchial papillae on the dorsal surface. No true pencil-bristles (setae bipennato-penicillatae) present.

1. *Polyodontes sibogae* n. sp. Pl. XXVIII, figs. 4—10.

Stat. 169. Anchorage off Atjatuning (W. coast of New Guinea). Depth 57 M. 1 incomplete specimen.

Stat. 274. 5°28′.2 Lat. S., 134°53′.9 Long. E. North off Aru Islands. Depth 57 M. 1 incomplete specimen.

At both above-named Stations an anterior fragment of a *Polyodontes*-species was dred-

1) IXe Congrès intern. de Zoologie tenu à Monaco, 1914, p. 470.
2) Tavole per servire alla classific. e conosc. degli Animali, Padova, 1817 (teste L. Agassiz).
3) Ann. Sc. natur. t. XXVII, 1832, p. 435, Pl. X, figs. 7—14.
4) Loc. cit. p. 24 and 25.

ged, that cannot be identified with one of the species of this genus, already known from the Indo-pacific region viz. *Polyod. (Panthalis) melanonotus* Gr. from the Philippines and Ceylon, *Polyod. (Eupompe) australiensis* Mc. Int. from Endeavour Strait (Cape York) and *Polyod. (Eupompe) Grubei* Kinb. from Guyaquil. Of the two first-named species we have a rather elaborate description, but the last one is only summarily described by KINBERG.

The two Siboga-specimens are nearly of the same length, 14 à 15 mm., and have a breadth of about 6 mm. (without bristles); they consist of 33 à 34 segments. Their colour is pale brown, buff. The elytra leave the median dorsal region of the body bare; only the three anterior ones, that are reversed, approach each other and cover the prostomium. The scales (Pl. XXVIII, fig. 6) are transversely elongated, ellipsoidal, with the scar of attachment situated eccentrically; they are translucent, faintly dotted with a brown pigment and show internally a great number of cellular cavities, giving them the appearance of a honey-comb. In *P. australiensis*, according to MC INTOSH, the two pairs of anterior elytra are provided at their anterior margin with a series of clavate papillae, whereas the other scales have the surface studded with minute papillae. The prostomium (Pl. XXVIII, figs. 4 and 5) is rounded quadrangular, with two stout cylindrical ommatophores, black-coloured over a great part of their length; behind them two small ocular-spots are visible, like as in *P. australiensis* and *P. melanonotus*, but in *P. Grubei* they appear to be absent. The median antenna (tentacle) emerges with a ridge-shaped basal part from the dorsal median line of the prostomium; its terminal joint is dilated below the filiform distal end and extends hardly beyond the ommatophores. In *P. australiensis* as well as in *P. melanonotus* the tentacle is short and does not reach the middle of the length of the eye-peduncles. The lateral antennae of *Pol. sibogae* too have a filiform tip and are a trifle shorter than the ommatophores. The palps are rather long, dotted with black spots, smooth, and bent backward reach to the 7th segment. Behind the mouth the ventral surface is strongly longitudinally folded till the 8th segment; with the 9th segment a faint transverse folding commences, whereas in the median line a smooth ridge occurs, that is somewhat convex.

The first parapodium bears two tentacular cirri, which terminate in a filiform tip and are both nearly of the same length, as long as the tentacle; it is provided with a dorsal and ventral fascicle of smooth capillary bristles. The 2nd parapodium (Pl. XXVIII, fig. 7), bearing the first elytrophore, shows a papilliform notopodium, provided with an acicula only; the neuropodium is high, rounded, with its distal margin divided in a great number of small lobes. It is provided with a large anterior lip, that has a ventral lobe that is reversed backwards; its posterior lip is much shorter. The neuropodial fascicle consists for the greater part of smooth, capillary bristles; however some of them are lanceolate, dilated above the shaft and finely denticulated, whereas in the ventral part a few setae serrulatae occur. As usually the ventral cirrus is very long.

In the 3rd parapodium the notopodium is somewhat longer, digitiform, whereas the neuropodium shows but a few round lobes along its distal margin; the capillary bristles nearly all disappeared except in the dorsal part of the fascicle. However in its central part four stout spines (setae aristatae) became visible and the number of setae serrulatae increased. The ventral cirrus is coarse, about as long as the neuropodium, with a papilliform stylode at its base. To begin with the 9th parapodium the spinning-gland occurs and in the dorsal part of the neuropodial

fascicle these appear some plumous setae, slender, lanceolate bristles, with hairy appendages along their frontal side as figured pl. XIX, fig. 102 by PRUVOT and RACOVITZA from *Pol. maxillosus (Panth. Lacasii)*; they undoubtly represent the pencil-bristles of other genera and therefore may be called setae pseudo-penicillatae. To begin with the 12th segment some translucent branchial papillae become visible on the dorsal side of the parapodium; also ventrally, at the median side of the ventral cirrus the skin is somewhat dilated and translucent.

2. *Polyodontes atro-marginatus* n. sp. Pl. XXIX, Figs. 5—7.

Stat. 19. 8° 44'.5 Lat. S., 116° 2'.5 Long E. Bay of Labuan Tring, Lombok. Depth 18—27 M. 1 incomplete specimen.
Stat. 47. Bima Anchorage. Depth 13—31 M. 1 incomplete specimen.
Stat. 71. Makassar and surroundings. Depth up to 32 M. 1 incomplete specimen.
Stat. 162. Between Loslos and Broken Islands, West off Salawatti. Depth 18 M. 1 incomplete specimen.
Stat. 240. Banda Anchorage. Depth 9—45 M. 1 incomplete specimen.
Stat. 311. Sapeh Bay, East coast of Sumbawa. Depth up to 36 M. 1 incomplete specimen.

At the above-named stations six anterior fragments were found of a Polyodontes-species, that, though closely allied to the preceding, cannot be identified with it. The largest specimen (from Stat. 311) has a length of 55 mm. and a breadth of $9^1/_2$ mm. (without bristles) and consists of 80 segments; the smallest one (from Stat. 162) measures only 22 mm. in length and 7 mm. in breadth and has 36 segments. The bare median region of the dorsum has a brown colour and moreover in the larger specimen shows dark transverse stripes, exactly over the intersegmental grooves. The scales (Pl. XXIX, fig. 6) are transverse elliptical and are provided at their exterior margin, outward from the scar of attachment, with a rectangular prolongation that forms a kind of pouch. They are dotted with a black pigment, that covers the hypodermic areolae, that occur here like as in other species; along the posterior and exterior border of the scales this pigment is more accumulated and gets the appearance of a black limb. Also the distal part of the parapodia is dotted with black. The anterior three pairs of elytra are round and reversed forward; in the largest specimen the third parapodium also shows a small elytron in stead of a dorsal cirrus, whereby, in my opinion, anew the homology of elytron and dorsal cirrus is proved (see my paper: Notes Leyden Museum, Vol. XXXV, p. 161). The prostomium (Pl. XXIX, fig. 5) is provided with two long ommatophores, each bearing at their distal end a large eye, furnished with a lens; at a short distance of their base a pair of small sessile eyes are visible. Between them the tentacle emerges, tapering distally, nearly as long as the eye-peduncles. The lateral antennae reach a good deal beyond the distal end of the ommatophores. The proboscis, that was everted in the smallest specimen, is dotted with a brown-violet pigment and bears at the entrance six conical papillae on each side of the large median one; they show a black spot near their base. The median papillae are not very long; the dorsal one is a trifle larger than that of the ventral side and both emerge from a broad base. The palps, nearly twice as long as the tentacular cirri, show two rows of brown spots and are provided with curved spinous papillae. The first parapodium bears two tentacular cirri, tapering distally, the dorsal being somewhat shorter than the ventral one; the parapodium is provided with capillary bristles and has a papilliform

appendage near the base of the cirri. The second parapodium shows much resemblance with that of *Pol. sibogae*; however the lobes of the distal margin of the neuropodium are less conspicuous and only some shallow incisions are visible. It is curious, that in the specimens several strange organisms had fixed themselves at the margin of the foot, and therefore the particularities of its structure could not be distinguished. The third parapodium has a long dorsal cirrus, that extends a good deal beyond the distal margin of the foot; the ventral cirrus, nearly as long as the foot, is dilated in its basal part and tapering distally. In this parapodium commence the stout spines (setae aristatae), that are somewhat cylindrical and bear a fascicle of short bristles on each side of the tip, at the base of the arista (Pl. XXIX, fig. 7); in *Pol. sibogae* these spines are faintly S-like bent, somewhat dilated at a distance from the distal end and provided with a smooth tip beneath the arista. To begin with the 9th parapodium the spinning-gland and the setae pseudo-penicillatae become visible. In the 12th and the succeeding segments at the base of the parapodia, at the median side of the ventral cirrus, there occur two or three translucent bullae, like in *Pol. australiensis*, and the ventral papilla forms a kind of pocket as in that species; dorsally the branchial papillae are visible.

3. *Polyodontes* sp.

Stat. 37. Sailus Ketjil, Paternoster Islands. Depth 27 M. and less. 1 specimen.

At the above-named Station the anterior fragment of a *Polyodontes*-species was dredged, that in some regards differs too much from the species of this genus, already known, to be identified with one of them. It has a length of 15 mm., and consists of about 30 segments; it is colourless. The prostomium possesses rather long, stout palps, abruptly ending in a short filiform tip and is beset over its whole length with long, filiform papillae, almost as long as the breadth of the palps. In *Pol. atro-marginatus* the palps are also beset with papillae, but these are very short and only in the basal part they become somewhat longer. Moreover the hook-like bristles (setae aristatae) in the neuropodial fascicle do not possess an arista, but have a smooth, blunt tip. The scales have an oval shape, with the scar of attachment lying eccentrically in the narrow, exterior part; they show an areolate structure.

Genus **Eupanthalis** Mc Intosh [1]).
(*Euarche* Ehlers [2]).

Two pairs of sessile eyes, no ommatophores. Median antenna (tentacle) inserted in front of the occipital margin of the prostomium; lateral antennae arising from its frontal margin. Neither branchial papillae nor true pencil-bristles (setae-bipennato-penicillatae) present.

1. *Eupanthalis nigromaculata* (Gr.)[3]). Pl. XXIX, figs. 1—4.

Grube, Annulata Semperiana, p. 50, Pl. IV, fig. 2.

1) Transact. Zoolog. Soc. of London, Vol. IX, 1877, p. 404.

2) Florida-Anneliden, p. 53.

3) That the species from Negombo, described and figured by Willey (loc. cit. p. 255), should be identical with Grube's *Panth. nigromaculata* appears doubtful to me; for it possesses only a single pair of small eyes, situated on the slightly protuberant lateral borders; the palps are densely fimbriate in their anterior half; the anterior elytra are inversely imbricate and do not cover the head.

POTTS, loc. cit. p. 345, Pl. XIX, fig. 18; Pl. XXI, figs. 53—55.

Stat. 114. 0° 58'.5 Lat. N., 122° 55' Long. E. Kwandang Bay entrance (North-Celebes). Depth 75 M. 1 incomplete specimen.

Of this species, first described by GRUBE from the Philippines and afterwards found by POTTS in the neighbourhood of the Maldives, an anterior fragment is present, consisting only of 23 segments and measuring 10 mm. in length. The prostomium (Pl. XXIX, fig. 1) is transversely elongated, about half as long as broad, with its frontal margin faintly emarginated in the middle and provided with two blunt, transparent, lateral corners; besides a large diffuse black patch on the lateral region of the head there is a pair of conspicuous eye-spots in front of the occipital border and another indistinct spot behind each frontal corner. From the middle of the occipital margin of the head, in front of the nuchal fold of the buccal segment, a long cylindrical tentacle arises, that is dilated beneath its filiform tip; two short, cylindrical antennae, whose distal half is filiform, are inserted on its frontal margin. The palps are thrice as long as the head, smooth, tapering distally, with a red ring beneath their tip. Behind the mouth the ventral median region is longitudinally folded till the intersegmental groove IV/V; in front of the mouth the skin is transversely grooved. The elytra are elliptical, smooth, with their scar of attachment situated eccentrically, next to the external border; only the two anterior of them are overlapping each other and cover the head-lobe, whereas the succeeding ones are widely separated from each other and leave the median dorsal region barren. Except the anterior pair all the scales have a black spot behind the middle of the anterior margin and the ventral side is also dotted with black in its median region.

The first segment bears two tentacular cirri, the dorsal being a trifle longer than the ventral one; it does not contain any bristles. The 2nd segment possesses setae serrulatae only and is provided with a very long ventral cirrus, extending a good deal beyond the extremity of the foot. In the succeeding segments the ventral cirrus is also well-developed, though it hardly reaches the distal end of the parapodium. The dorsal and ventral lobe of the parapodia are not distinctly separated from each other, though behind the 9th segment, the first-named can be recognised by its acicula and its spinning gland. In segment 10 (Pl. XXIX, fig. 2) four kinds of bristles could be distinguished: (1) in its central part, stout, yellow uncini, faintly S-like bent, with a blunt, smooth tip (Pl. XXIX, fig. 3 *a*); (2) in its dorsal part, vitreous, transparent setae, not quite as stout as the preceding ones, with an obtuse tip, beset with spines, from which a whip-shaped, spinous appendage arises (setae aristatae fig. 4 *b*); (3) in its ventral part, rather stout bristles, transparent, with the distal end of the shaft somewhat dilated before terminating with a slender, falcated, spinous tip (setae serrulatae fig. 3 *b*); (4) in front of the first two groups, slender, straight setae, with few spines in whorls (fig. 4 *a*).

True pencil-bristles (setae bipennato-penicillatae) as figured by KINBERG (loc. cit. Pl. VII, fig. 34 G. and 35 G. s″) and by MALAQUIN and DEHORNE (loc. cit. Pl. 52, fig. 10) do not occur here, as also stated by MC INTOSH; the bristles named "pencillate" by POTTS, must be ranged in my opinion, among the "setae serrulatae".

Family CHRYSOPETALIDAE.

Body short or elongated, with few or numerous segments, bearing on their dorsal side a fan or a transverse row of paleae. Cephalic lobe provided with three antennae and two pairs of eyes. Ventral bristles compound.

As already stated in my paper "on a Bhawania-specimen"[1]) the family of *Palmyridae* in the sense of SCHMARDA[2]), RACOVITZA[3]), GRAVIER[4]) and POTTS[5]) can no longer be maintained; for since the investigations of AUGENER[6]) definitely have settled, that *Palmyra aurifera* is closely allied to the Aphroditidae, only lacking the elytra, it will be preferable to unite the species of *Palmyra* and *Palmyropsis* in the family of *Gymnaphroditidae* (*Aphrodisiens nus* of AUDOUIN and MILNE-EDWARDS[7]). Though hitherto we have been unable to make out the prostomium and its appendages in *Bhawania*, we still may conclude because of the great resemblance in structure of this genus with *Paleonotus* and *Chrysopetalum*, that *Bhawania* also has three antennae.

Genus **Bhawania** Schmarda.

SCHMARDA, Neue Wirbellose Thiere, II, 1861, p. 164.

Body elongated, with numerous segments. Paleae arranged in a transverse row, only denticulated along the median edge.

Of this genus several species are described, as well from the Indo-Pacific region (*B. myrialepis* Schm., *B. cryptocephala* Grav.) as from the Atlantic (*B. Goodei* Webst.); however the descriptions are often too incomplete for a satisfactory identification. The species first

1) Notes from the Leyden Museum, Vol. XXX, 1909, p. 219, Pl. 9.
2) Loc. cit. p. 162.
3) Le lobe céphalique et l'encéphale des Annélides polychètes, Arch. Zool. expérim. (Sér. 3) IV, 1896, p. 209.
4) Annél. Polychètes de la Mer Rouge, loc. cit. p. 258.
5) Loc. cit. p. 325.
6) See page 61 of this paper.
7) Ann. Sc. natur. vol. 27, 1832, p. 445.

described is *Bhawania myrialepis*, mentioned by SCHMARDA from Trinkomali (Ceylon). This specimen has a length of 63 mm. and a breadth of 4 mm.; the number of segments amounts to 220. The paleae, which cover the whole back, are golden-yellow, mixed with red; the middle of the back is paler, its margins darker coloured. The ventral side of the body is red-brown. The paleae are situated in a faintly curved row, 12 to 14 on each side of the back; in the middle of the body they measure 0.5 mm. in length. They show 14 longitudinal lines, that are dissolving by high power in small spines, standing upon prominent ridges. Presumably the head was withdrawn, for SCHMARDA says: „the head is small, with 5 (?) antennae of the same length; eyes not visible". Forty years afterwards GRAVIER published an elaborate description of *Bh. cryptocephala*, based on three specimens, collected by COUTIÈRE near Djibouti. They are somewhat smaller than SCHMARDA's specimens, for the largest one has a length of 25 mm., and a breadth of 2.1 mm., whereas the number of segments is 180; its colour is amber-yellow, dark red-brown along the sides. The paleae are striated transversally and longitudinally and moreover show three prominent ridges with a beaded edge. In these specimens also the head was withdrawn and GRAVIER could only recognize in the median line (?) two oval spots, identified by him with eyes. POTTS believes to have found the same species in the neighbourhood of Zanzibar, though he observed some differences in the structure of the paleae and the ventral setae. I think it very probable that SCHMARDA's worm also belongs to the same species, but this cannot be settled without examining the typical specimen. In 1909, without knowing GRAVIER's paper, I described my self a *Bhawania*-specimen from Batavia, that in the structure of its paleae and parapodia so much resembles *Bhaw. cryptocephala*, that I believe it also ought to be identified with this species.

1. *Bhawania cryptocephala* Grav.

GRAVIER, Annélides polychètes de la Mer rouge, p. 263, Pl. X, figs. 152—156.

Stat. 176. Anchorage off Lilintah, south coast of Misool. Reef. 1 incomplete specimen.

A fragment, coloured brownish yellow, paler along the sides; its greatest breadth is $2^1/_2$ mm.

2. *Bhawania cryptocephala* Grav., var. *Pottsiana* n. v.

POTTS, Polychaeta of the Indian Ocean, p. 328.

Stat. 115. East side of Pajunga Island, Kwandang Bay (North-Celebes). Reef. 1 incomplete specimen.

At the above-named Station a small fragment was found of the variety of *Bhaw. cryptocephala*, first mentioned by POTTS from Zanzibar and therefore named after him; it is characterized by, (1) small irregular spines on the tip of the paleae, and (2) a third kind of ventral bristles, very slender, with long hair-like appendix, but always with a smooth edge.

3. *Bhawania amboinensis* n. sp.

Palea of
Bhawania amboinensis.
Highly magnified.

Stat. 231. Ambon Anchorage. Reef. 1 incomplete specimen.

At this Station an anterior fragment of a *Bhawania*-specimen was collected, the paleae of which, though in general appearance agreeing with those of *Bhaw. cryptocephala*, still by their structure are clearly distinguished from them. For on their upper side, that shows the three longitudinal ridges, the internal of which bears scale-like denticulations, the median half of the surface is beset with transverse, irregularly bent, raised lines, that on the tip of the palea acquire a net-like arrangement; the inferior side of the paleae is smooth. Their number amounts to 25 at one side of the dorsum, whereas in the specimens of *Bhaw. cryptocephala* I counted only 20. The greatest breadth of the body is $2^1/_2$ mm. My colleague Dr. DE GRAAF had the kindness to make for me some transverse sections of the head; in these sections the two pairs of eyes, situated behind each other, clearly could be recognized. The eyes consist of a conical refractive organ, surrounded by a cup of black pigment, like as in *Chrysopetalum debile* (Gr.), according to the figure of RACOVITZA (loc. cit. Pl. IV).

ADDENDA.

P. 63. *Pontogenia villosa* n. sp.

Stat. 131. Anchorage off Beo, Karakelang Islands. Reef. 1 specimen.

The specimen is strongly contracted and measures hardly 25 mm. in length; the number of its segments is about 30. It is distinguished at first sight from the species of *Pontogenia*, hitherto described, by its thick dorsal felt, that entirely covers the elytra and also hides the greater part of the paleae, which only with their distal end are emerging from it. The paleae (Fig. 1) are of a pale yellowish colour and lack the golden gloss of these bristles in *Pontog. nuda* and other species; they are slightly bent, terminating in an acute apex and on the convex side of their distal half are provided with two rows of small, alternating tubercles. Besides the paleae the notopodium contains three kinds of thread-like setae, which form the dorsal felt viz. (1) slender, bent, capillary bristles, (2) setae with an articulated appearance, half as broad as the preceding, (3) much thinner threads, which are only visible by high power. According to the observations of CLAPARÈDE [1]) and POTTS [2]) the dorsal felt of *Pont. chrysocoma* consists only of two kinds of setae. The ventral bristles (four in each fascicle) are of a dark brown colour and have the usual bifurcated apex; their accessory tooth is rather small (Fig. 2). The head is provided with two large, globular eye-stalks, bearing each a pair of eyes, the ventral of which is two times larger than the dorsal one. The skin of the body is densely covered with papillae.

Fig. 1. Fig. 2.
Pontogenia villosa n. sp.

P. 75. *Lepidonotus vandersandei* n. sp.

Southwest coast of Sumba, East off Sindikiri Bay. Mr. G. A. J. VAN DER SANDE, 1909.

At the above-named Station Mr. VAN DER SANDE, Surgeon of the Dutch Navy, a zealous collector, met with two *Lepidonotus*-specimens, that can not be identified with any of the species

1) Annélides Chétopodes du Golfe de Naples p. 368. Pl. I, fig. 3.
2) Polychaeta of the Indian Ocean, Part II, p. 329, Pl. 20, figs. 26, 27, Pl. 21, figs. 35, 36.

hitherto described from the Malay Archipelago. They measure 20 mm. in length, whereas their breadth, that remains nearly equal over the total length, amounts to 5 mm., the bristles excepted.

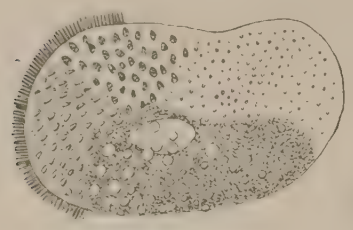

Fig. 1.
Lepidonotus vandersandei n. sp.

The worms are nearly colourless except the elytra, which are blackish. In the anterior region of the body the scales are overlapping each other, but in the posterior segments they leave the median dorsal part bare. Each elytron (Fig. 1) is reniform or oval, along its exterior border beset with short, rather stout, cylindrical cilia; the internal region of its upper surface is sparingly covered with small tubercles, whereas the remaining part is occupied by rather large, blunt conical papillae, which in the vicinity of the scar of attachment have a pale colour. The ventral bristles are stout, with a hook-shaped apex, like in *Halosydna nebulosa* Gr. (MARENZELLER, Südjapanische Anneliden, III, Pl. I, fig. 1D); 10 to 12 densely crowded, denticulated rows occur on the short, dilated, distal region.

The head (Fig. 2) is rounded rectangular, more broad than long, provided with a shallow, median groove; from the anterior part of this groove the tentacle arises. Its basal joint is nearly as long as the head, whereas its distal part, tapering forward, is nearly thrice as long. The frontal prolongations, from which the lateral antennae arise, have the same length as the basal joint of the tentacle and the antennae extend forward as far as the tentacle. The antennae as well as the tentacle below their tapering distal end are surrounded by a blackish ring and in their basal part they show also some blackish pigment. The palps are rather stout in their basal part and terminate in a filiform tip; they are somewhat longer than the antennae and are provided with blackish pigment over their whole length. Two large eyes are situated next to each other on the lateral part of the head. The tentacular cirri differ very much in length; the dorsal one is a trifle longer than the antennae, whereas the ventral cirrus is half as long as the dorsal one.

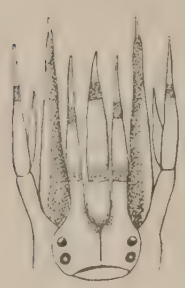

Fig. 2.
Lep. vandersandei n. sp.

P. 101. To *Admetella (Polynoë) longipedata* Mc Intosh ought to be added:

Stat. 178. 2°40′ Lat. S., 128°37′.5 Long. E. North off Ceram. Depth 835 M. 1 specimen.

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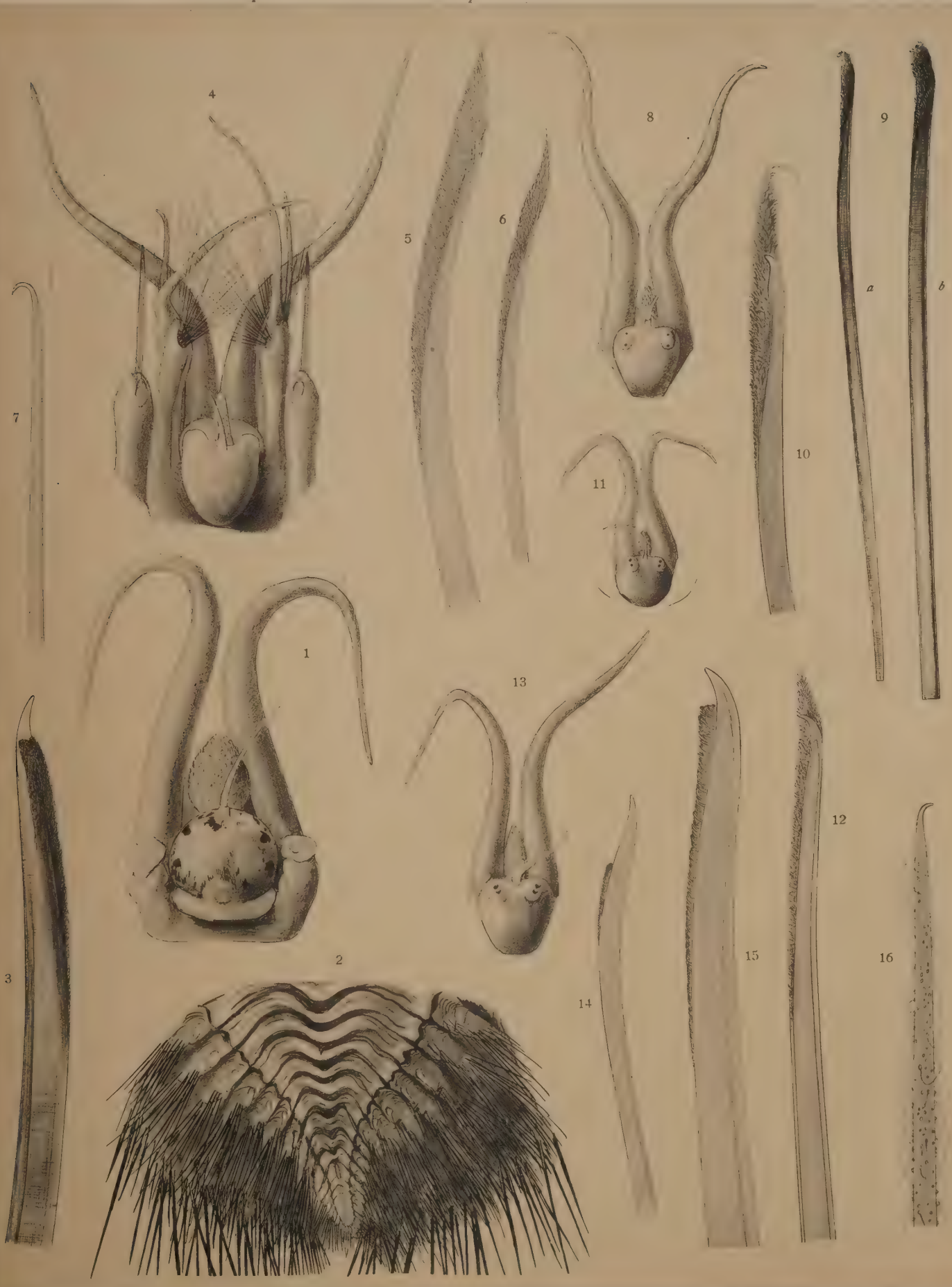
PLATE XI.

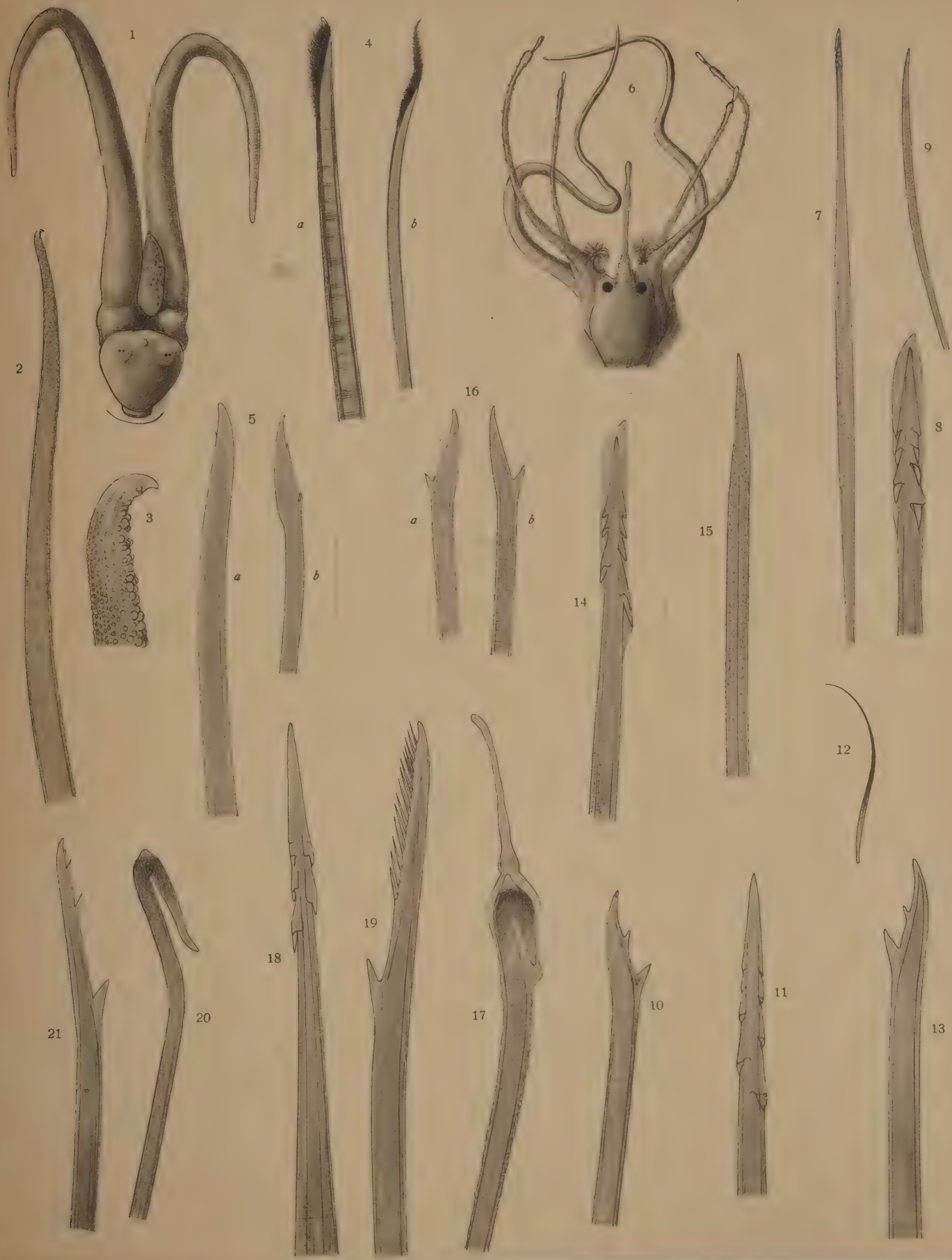
Fig. 1. Dorsal view of the head of *Aphroditella malayana* Horst. × 18.
Fig. 2. Ventral view of the posterior segments of the same species. × $4^1/_2$.
Fig. 3. Ventral bristle of the same species. × 93.
Fig. 4. Dorsal view of the head of *Aphroditella limosa* Horst. × $22^1/_2$.
Figs. 5 and 6. Ventral bristles of the same species. × 130.
Fig. 7. Dorsal bristle of the same species. × 360.
Fig. 8. Dorsal view of the head of *Aphroditella sibogae* Horst. × $22^1/_2$.
Figs. 9, *a* and *b*. Superior ventral bristles of the same species. × 37.
Fig. 10. Inferior ventral bristle of the same species. × 200.
Fig. 11. Dorsal view of the head of *Aphroditella decipiens* Horst. × $22^1/_2$.
Fig. 12. Ventral bristle of the same species. × 130.
Fig. 13. Dorsal view of the head of *Aphroditella mongolica* Horst. × $22^1/_2$.
Figs. 14 and 15. Ventral bristles of the same species. × 130.
Fig. 16. Dorsal bristle of the same species. × 200.



J. F. Obbes del.

PLATE XII.

Fig. 1. Dorsal view of the head of *Aphroditella floresiana* Horst. × 22 1/2.
Fig. 2. Dorsal bristle of the same species. × 72.
Fig. 3. Tip of a dorsal bristle of the same species highly enlarged. × 440.
Figs. 4, *a* and *b*. Ventral bristles of the same species. × 72.
Figs. 5, *a* and *b*. Ventral bristles of a young specimen of the same species. × 360.
Fig. 6. Dorsal view of the head of *Hermione moluccana* Horst. × 19.
Fig. 7. Glochideal dorsal bristle of the same species. × 29.
Fig. 8. Tip of a glochideal dorsal bristle of the same species highly enlarged. × 126.
Fig. 9. A short dorsal bristle of the same species. × 29.
Fig. 10. A ventral bristle of the same species. × 72.
Fig. 11. Tip of a glochideal dorsal bristle of *Hermione malleata* Grube. × 126.
Fig. 12. A short dorsal bristle of the same species. × 10.
Fig. 13. A ventral bristle of the same species. × 72.
Fig. 14. Tip of a glochideal dorsal bristle of *Hermione parva* Horst. × 175.
Fig. 15. A short dorsal bristle of the same species. × 93.
Figs. 16, *a* and *b*. Ventral bristles of the same species. × 93.
Fig. 17. Tip of an uncinate dorsal bristle of *Halogenia arenifera* Horst. × 175.
Fig. 18. Tip of a glochideal dorsal bristle of the same species. × 175.
Fig. 19. Ventral bristle of the same species. × 175.
Fig. 20. Tip of an uncinate dorsal bristle of *Halogenia conchifera* Horst. × 175.
Fig. 21. Tip of a ventral bristle of the same species. × 175.



J. F. Obbes del.

HELIOTYPIE, VAN LEER, AMSTERDAM

PLATE XIII.

Fig. 1. Dorsal view of *Laetmonice producta* Gr. var. × $^{9}/_{10}$.
Fig. 2. 18th parapodium of the same species. × $5^{4}/_{10}$.
Fig. 3. Notopodial spine of the 4th parapodium. × 72.
Fig. 4. Dorsal view of *Laetmonice malayana* Horst. × $^{9}/_{10}$.
Fig. 5. Tip of a glochideal dorsal bristle of the same species. × 48.
Fig. 6. Ventral bristle of the same species. × 48.
Fig. 7. Dorsal view of the head of *Laetmonice rugosa* Horst. × 24.
Fig. 8. Neuropodium of the same species. × $14^{1}/_{2}$.
Fig. 9. Tip of a glochideal dorsal bristle of the same species. × 38.
Fig. 10. Dorsal view of the head of *Laetmonice dubiosa* Horst. × 24.
Fig. 11. Tip of a glochideal dorsal bristle of the same species. × 48.
Fig. 12. Neuropodium of the same species. × 20.
Fig. 13. Neuropodium of *Laetmonice breve-pinnata* Horst. × 37.
Fig. 14. Tip of a glochideal dorsal bristle of *Laetmonice batheia* Horst. × 72.
Fig. 15. Tip of a ventral bristle of the same species. × 72.

J. F. Obbes del.

HELIOTYPIE, VAN KEULEN AMSTERDAM

PLATE XIV.

Fig. 1. Tip of a glochideal dorsal bristle of *Laetmonice viridescens* n. sp. × 93.
Fig. 2. Tip of a ventral bristle of the same species. × 93.
Fig. 3. Tip of a glochideal dorsal bristle of *Laetmonice* sp. × 72.
Fig. 4. Tip of a ventral bristle of the same species. × 72.
Fig. 5. Palea of *Pontogenia nuda* n. sp. × 37.
Fig. 6. Tip of a neuropodial bristle of the same species. × 37.
Fig. 7. Scale of the same species. × 29.
Fig. 8. Palea of *Pontogenia spinosa* n. sp. × 93.
Fig. 9. Tip of a neuropodial bristle of the same species. × 93.
Fig. 10. Scale of *Aphrogenia villosa* Horst. × 18.
Fig. 11. Dorsal bristle of the same species. × 37.
Fig. 12. Tip of a ventral bristle of the same species. × 93.
Fig. 13. Tip of a dorsal bristle of *Aphrogenia nigropunctata* Horst. × 93.
Fig. 14. Scale of *Lepidonotus adspersus* Gr. × 19.
Fig. 15. Scale of *Lepidonotus albopustulatus* Horst. × 19.
Fig. 16. Parapodium of the same species. × 29.

J. F. Obbes del.

HELIOTYPIE, VAN LEER, AMSTERDAM

PLATE XV.

Fig. 1. Dorsal view of the anterior segments of *Iphionella cimex* (Qtrf.). × 12.
Fig. 2. Dorsal bristle of the neuropodial fascicle of the same species. Highly magnified.
Fig. 3. Ventral bristle of *Lepidonotus acantholepis* Gr. Highly magnified.
Fig. 4. Dorsal bristle of the same species. Highly magnified.
Fig. 5. Dorsal view of the anterior segments of *Eulepis malayana* Horst. × 10.
Fig. 6. Parapodium of the same species. × 20.
Fig. 7. Pectinated bristle of the neuropodial fascicle of the same species. Highly magnified.
Fig. 8. Ventral bristle of *Lepidonotus cristatus* Gr. Highly magnified.
Fig. 9. Dorsal view of the anterior segments of *Allmaniella arafurensis* Horst. Magnified.
Fig. 10. Papillae of the first elytron of *Lepidonotus carinulatus* Gr. Highly magnified.

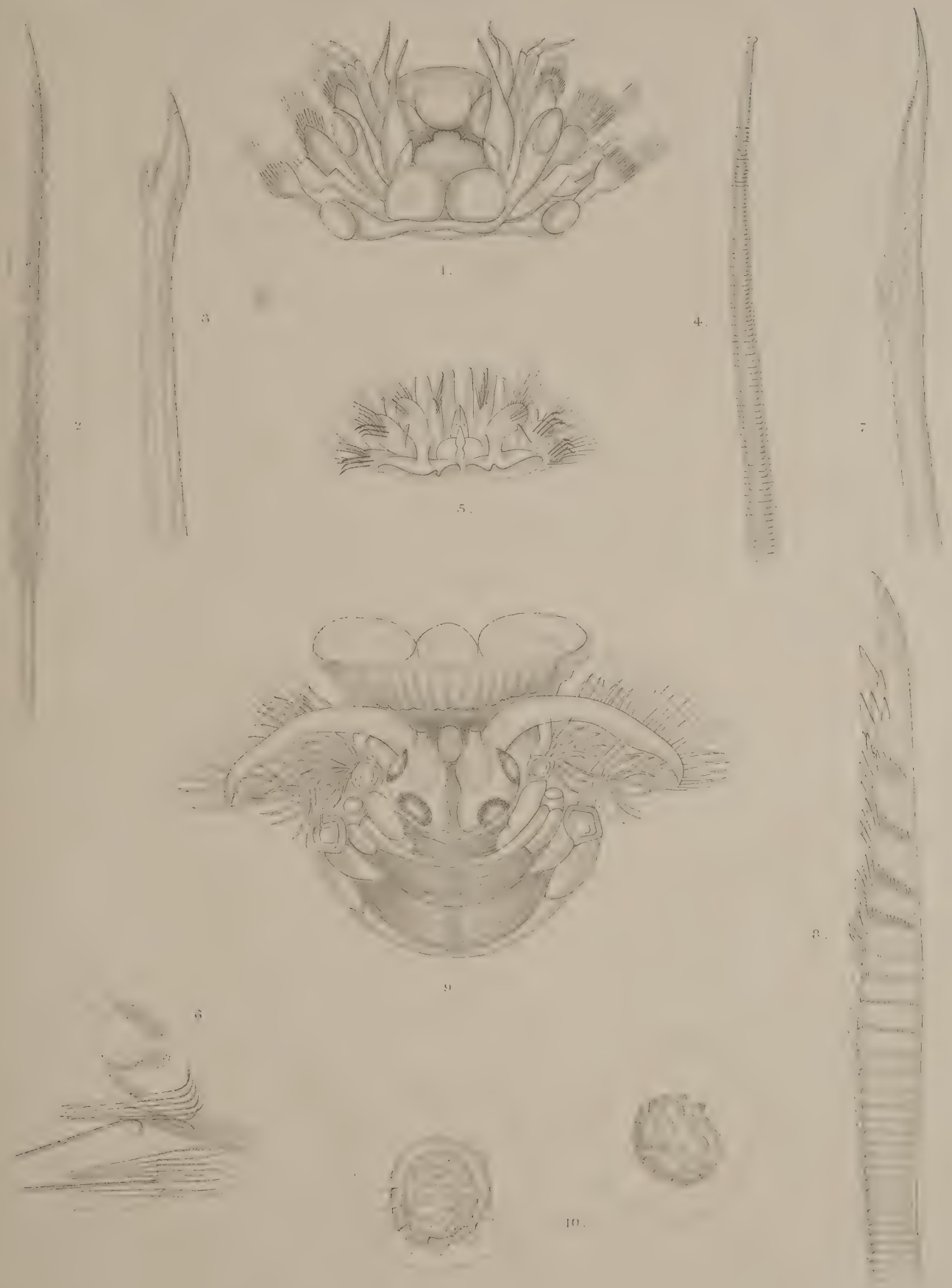


Fig. 5 et 6 autor, cet. C. Ritsema del.

Fa. P. W. M. Trap impr.

PLATE XVI.

Fig. 1. Dorsal view of the anterior body-region of *Lepidasthenia sibogae* Horst. × 10.
Fig. 2. An elytron-bearing parapodium of the same species. Magnified.
Fig. 3. A cirrus-bearing parapodium of the same species. Magnified.
Figs. 4, *a* and *b*. A dorsal and a ventral seta of the neuropodial fascicle of the same species. Highly magnified.
Fig. 5. Dorsal view of the anterior segments of *Gastrolepidia clavigera* Schm. Magnified.
Fig. 6. Notopodial bristle of *Scalisetosus crinoidicola* Potts. Highly magnified.
Fig. 7. Ventral neuropodial bristle of the same species. Highly magnified.
Fig. 8. Dorsal neuropodial bristle of the same species. Highly magnified.

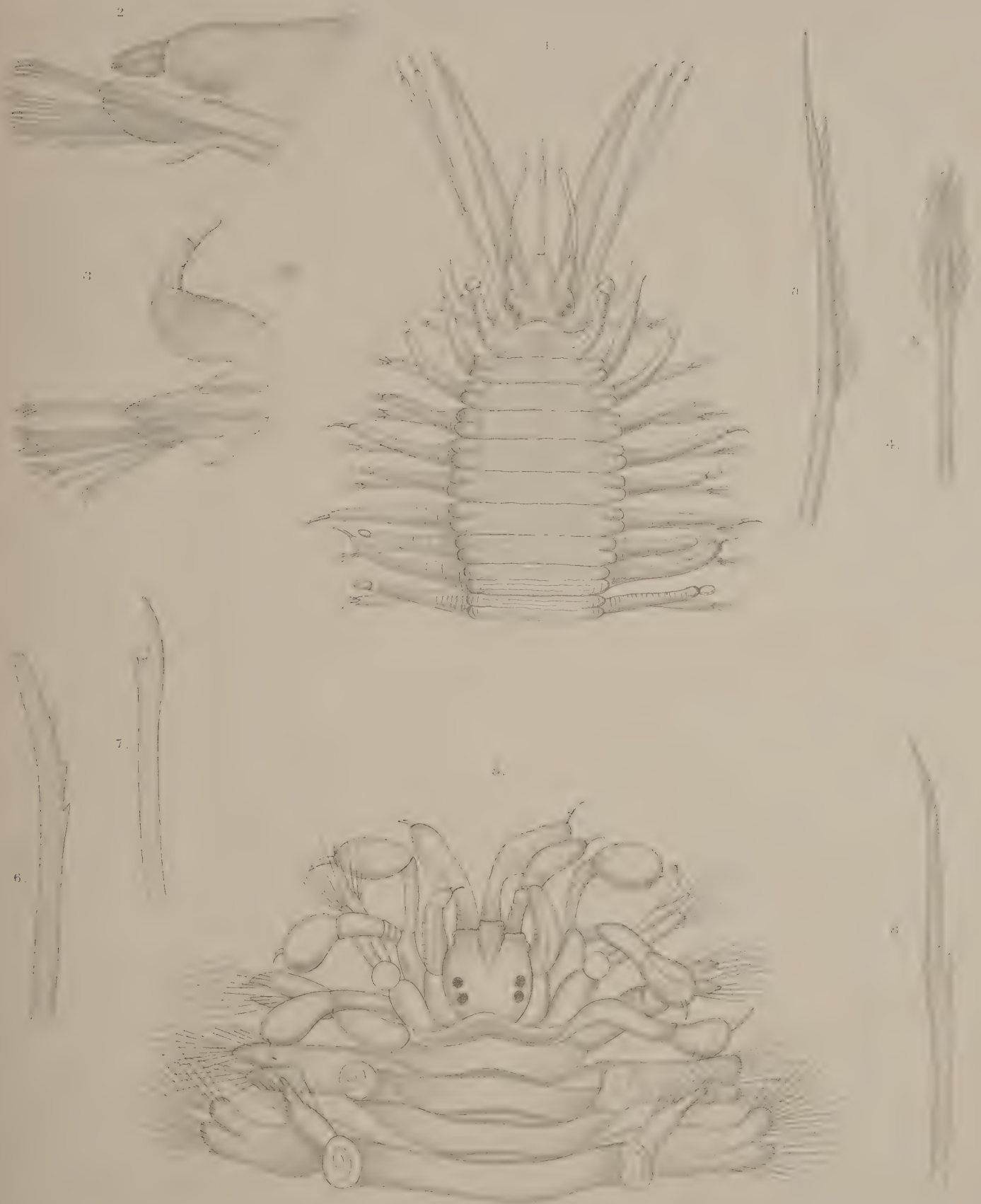


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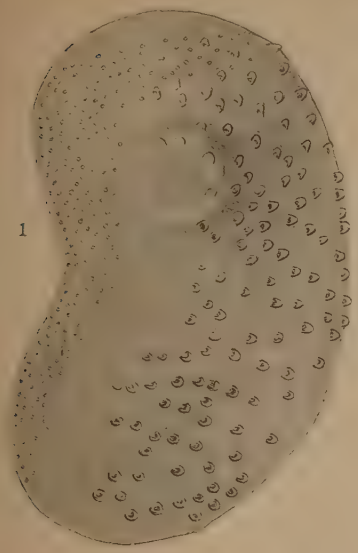
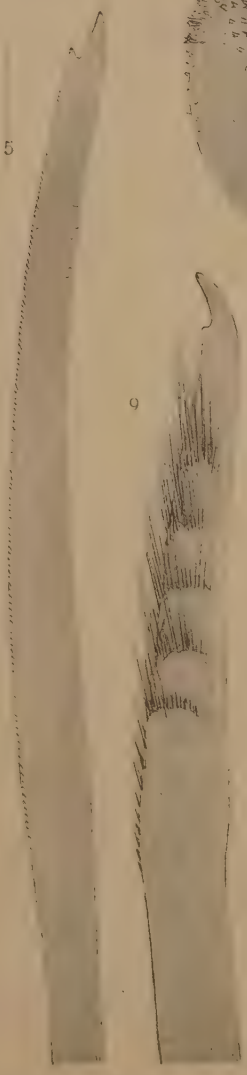
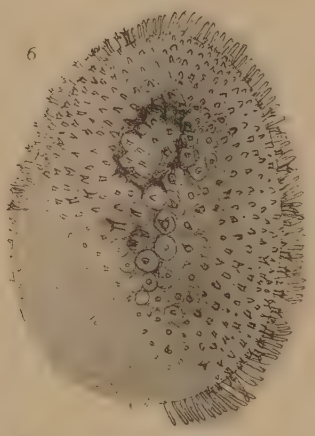
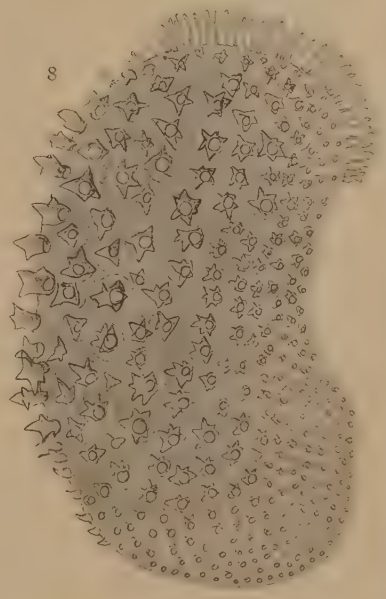
PLATE XVII.

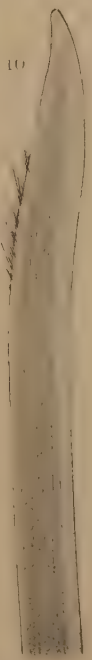
Fig. 1. Scale of *Lepidonotus javanicus* n. sp. × 29.
Fig. 2. Neuropodial bristle of the same species. × 360.
Fig. 3. Dorsal view of the anterior segments of *Lepidonotus malayanus* Horst. × 19.
Fig. 4. Scale of the same species. × 19.
Fig. 5. Neuropodial bristle of the same species. × 360.
Fig. 6. Anterior scale of *Lepidonotus ruber* n. sp. × 38.
Fig. 7. Scale of median body-region of the same species. × 38.
Fig. 8. Scale of *Lepidonotus suluensis* n. sp. × 28.
Fig. 9. Ventral bristle of the same species. × 340.
Fig. 10. Neuropodial bristle of *Lepidonotus* sp. (Stat. 99). × 450.
Fig. 11. Scale of the same species. × 29.

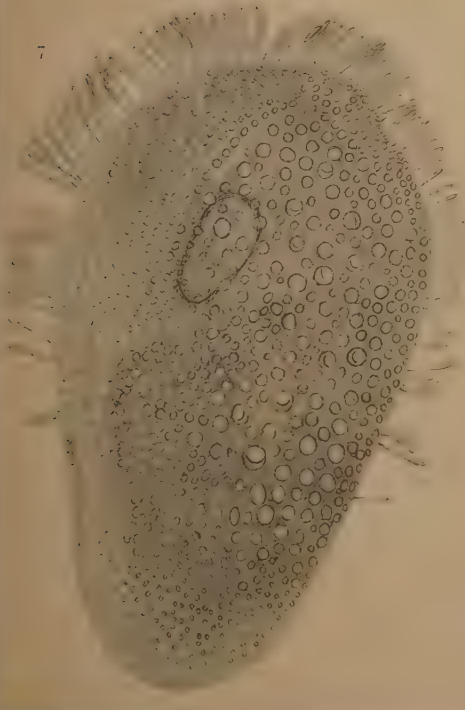












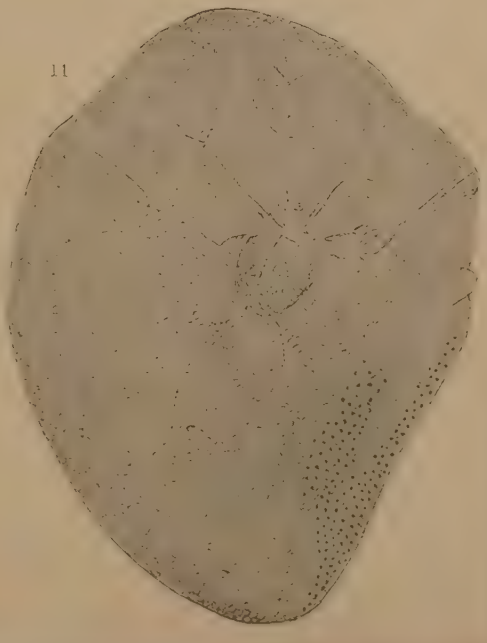


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PLATE XVIII.

Fig. 1. Ventral bristle of *Paralepidonotus boholensis* (Gr.). × 130.
Fig. 2. Dorsal bristle of the same species. × 130.
Fig. 3. Parapodium of *Allmaniella arafurensis* Horst. × 17.
Fig. 4. Ventral bristle of the same species. × 90.
Fig. 5. Dorsal bristle of the same species. × 90.
Fig. 6. Anterior segments of *Allmaniella ptycholepis* (Gr.). × 29.
Fig. 7. Parapodium of the same species. × 48.
Fig. 8. Dorsal bristle of the same species. × 450.
Fig. 9. Ventral bristle of the same species. × 450.
Fig. 10. Parapodium of *Allmaniella* sp. (Stat. 240). × 49.
Fig. 11. Ventral bristle of the same species. × 450.
Fig. 12. Dorsal bristle of the same species. × 450.

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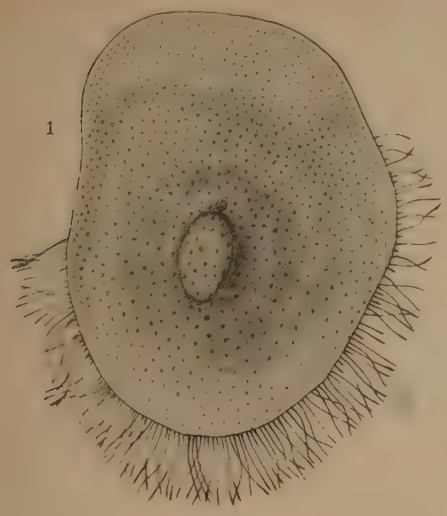
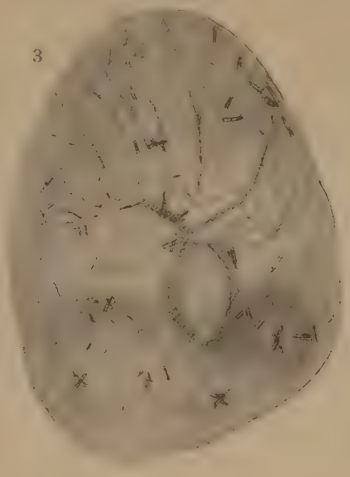
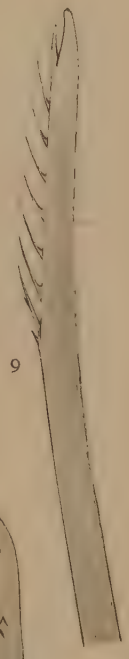
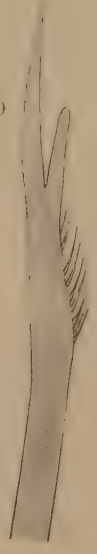
PLATE XIX.

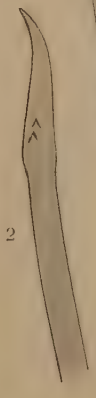
Fig. 1. Scale of *Halosydna pilosa* n. sp. × 29.
Fig. 2. Neuropodial bristle of the same species. × 198.
Fig. 3. Scale of *Halosydna batheia* n. sp. × 38.
Fig. 4. Parapodium of the same species. × 48.
Fig. 5. Neuropodial bristle of the same species. × 250.
Fig. 6. Head of *Parahalosydna sibogae* Horst. × 29.
Fig. 7. Parapodium of the same species. × 48.
Figs. 8, *a*, *b*, *c* and *d*. Neuropodial bristles of *Lepidasthenia affinis* n. sp. × 198.
Fig. 9. Dorsal neuropodial bristle of *Lepidasthenia microlepis* Potts. × 360.
Fig. 10. Dorsal neuropodial bristle of *Lepidasthenia* sp. (Stat. 105). × 250.
Fig. 11. Dorsal view of the anterior segments of *Weberia pustulata* Horst. × 11.
Fig. 12. Parapodium of the same species. × 19.

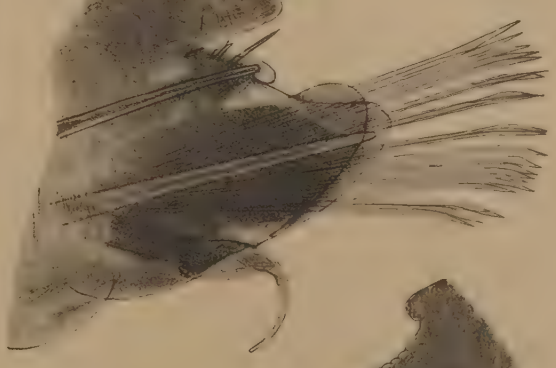


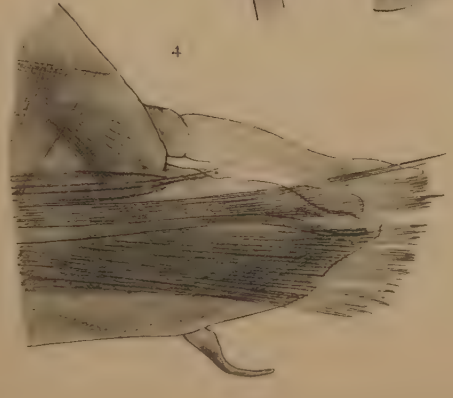












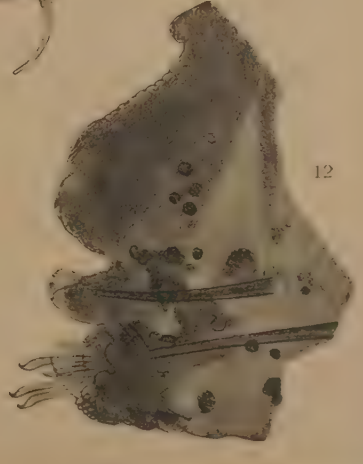


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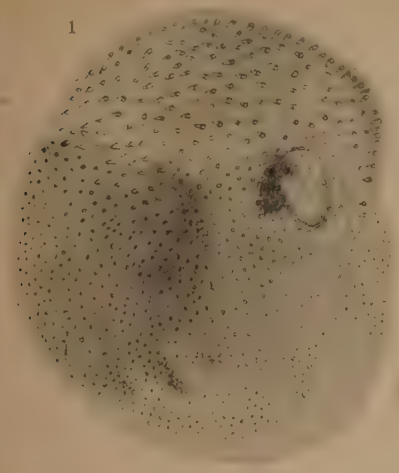
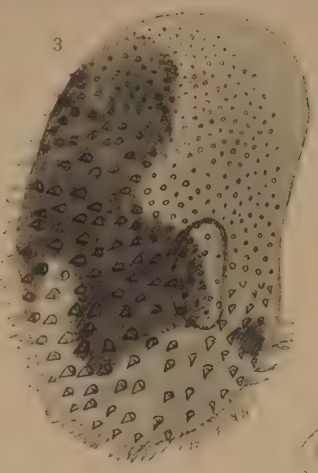
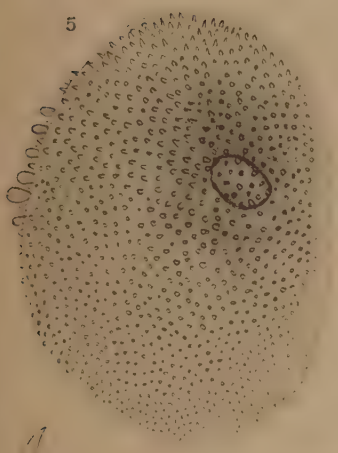
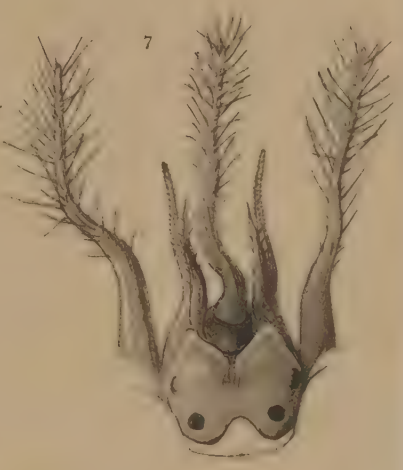
PLATE XX.

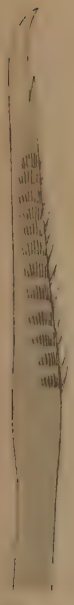
Fig. 1. Scale of *Harmothoë atra* Horst. × 38.
Fig. 2. Head of the same species. × 38.
Fig. 3. Scale of *Harmothoë nigricans*. × 38.
Fig. 4. Head of the same species. × 38.
Fig. 5. Scale of *Harmothoë imbricata* (L.). × 38.
Fig. 6. Parapodium of the same species. × 38.
Fig. 7. Head of *Harmothoë* sp. (Stat. 164). × 72.
Fig. 8. Neuropodial bristle of the same species. × 360.
Fig. 9. Scale of *Lagisca elytrophora* Horst. × 38.
Fig. 10. Parapodium of the same species. × 72.
Fig. 11. Ventral neuropodial bristle of the same species. × 360.
Fig. 12. Parapodium of *Lagisca malayana* Horst. × 38.
Fig. 13. Dorsal view of two segments of the posterior body-region of the same species. × 24.

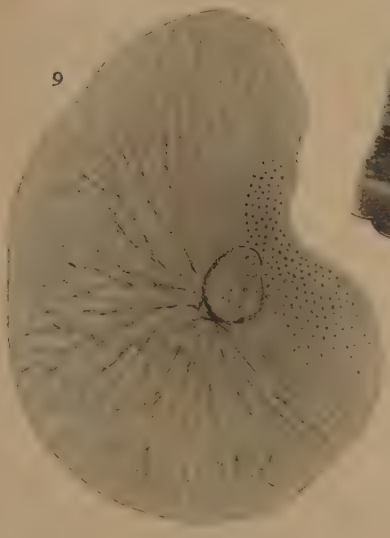


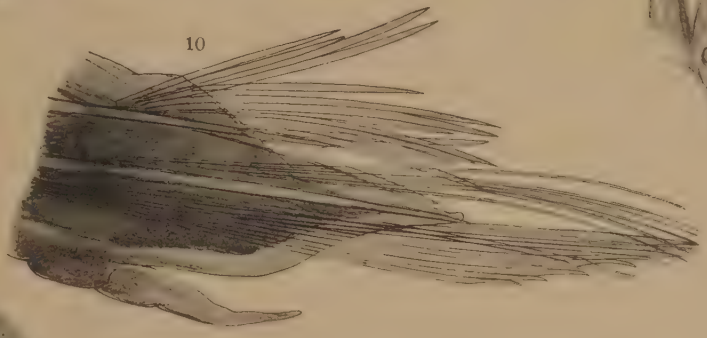


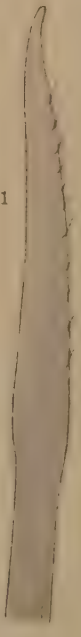












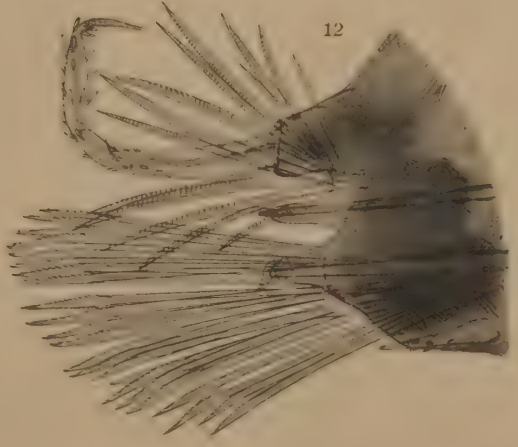


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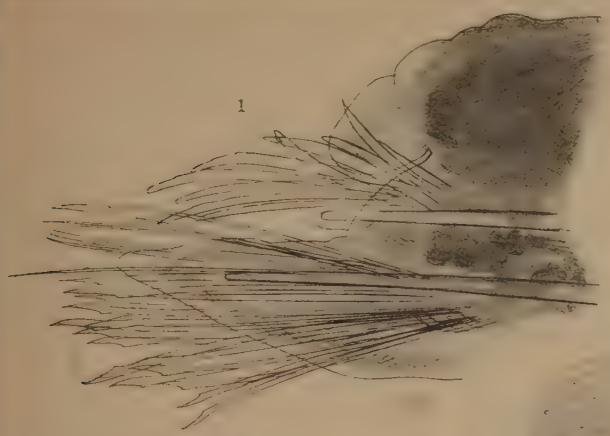
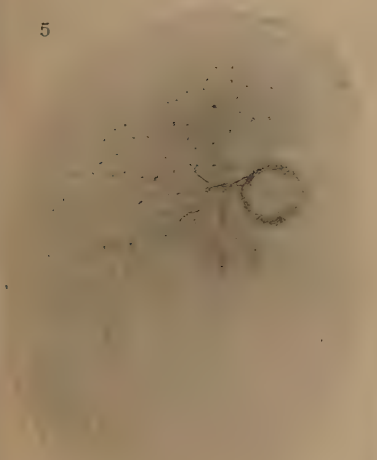
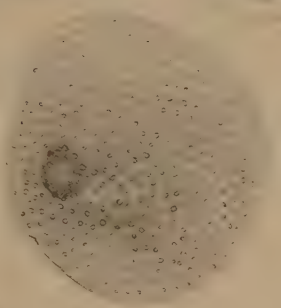
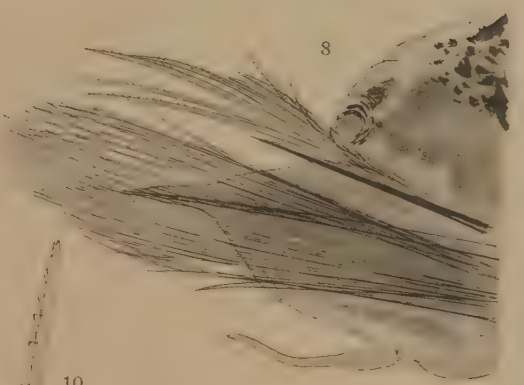
PLATE XXI.

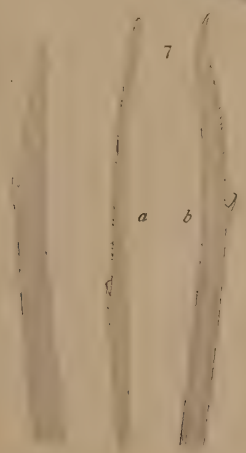
Fig. 1. Parapodium of *Scalisetosus crinoidicola* Potts. × 22.
Fig. 2. Head of *Scalisetosus papilliferus* Horst. × 38.
Fig. 3. Scale of the same species. × 38.
Fig. 4. A papilla of the scale of the same species. × 360.
Fig. 5. Scale of *Scalisetosus tentaculatus* Horst. × 29.
Fig. 6. Notopodial bristle of the same species. × 198.
Figs. 7, *a* and *b*. Dorsal and ventral neuropodial bristle of the same species. × 198.
Fig. 8. Parapodium of *Scalisetosus* sp. (Stat. 260). × 47.
Fig. 9. Neuropodial bristle of the same species. × 360.
Fig. 10. Notopodial bristle of the same species. × 360.
Fig. 11. Scale of *Polynoë cornuta* Fischli. × 38.
Fig. 12. Parapodium of the same species. × 38.
Fig. 13. Head of *Polynoë kampeni* Horst. × 38.
Figs. 14, *a* and *b*. Dorsal and ventral neuropodial bristle of the same species. × 250.
Fig. 15. Head of *Polynoë nigro-punctata* Horst. × 38.
Fig. 16. Notopodial bristle of the same species. × 250.
Fig. 17. Neuropodial bristle of the same species. × 250.
Fig. 18. Scale of *Polynoë versluysi* Horst. × 48.
Fig. 19. Parapodium of the same species. × 48.
Fig. 20. Dorsal neuropodial bristle of *Polynoë* sp. (Stat. 267). × 250.

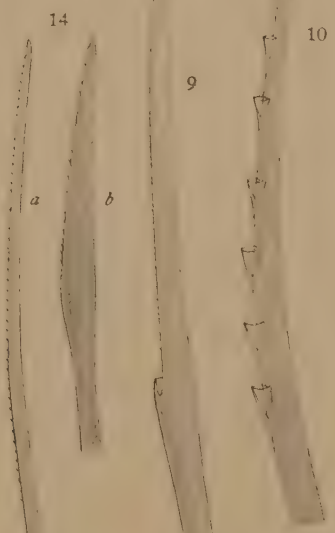


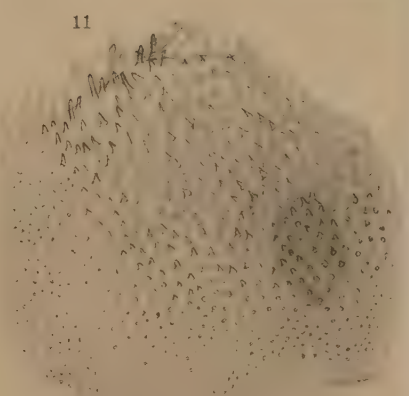


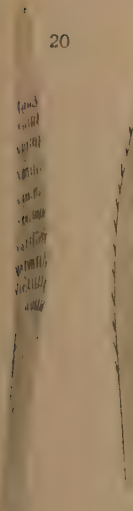


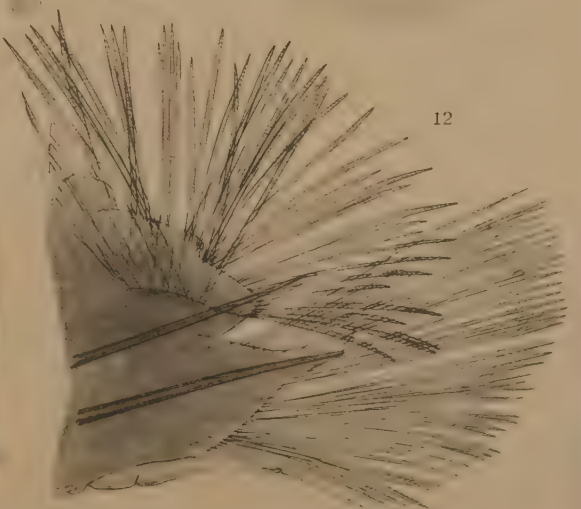


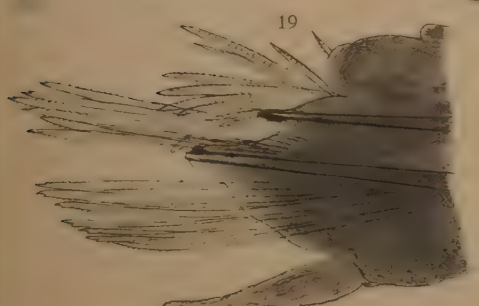












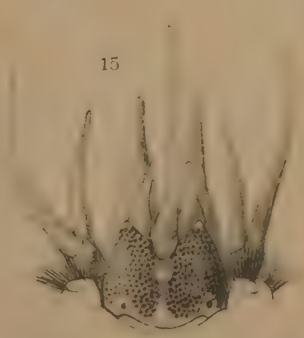


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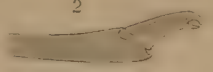
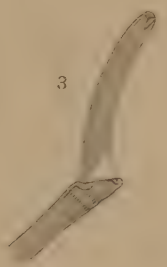
PLATE XXII.

Fig. 1. Dorsal view of the anterior segments of *Euthalenessa oculata* (Mc Int.). × 23.
Fig. 2. Short neuropodial bristle of the 10th parapodium of the same species. × 225.
Fig. 3. Neuropodial bristle of the 50th parapodium of the same species. × 225.
Fig. 4. Scale of *Sigalion bandaënsis* n. sp. × 45.
Fig. 5. Parapodium (25th) of the same species. × 45.
Fig. 6. Parapodium (45th) of *Sthenelais variabilis* Potts. × 45.
Fig. 7. Parapodium (10th) of *Sthenelais dubiosa* n. sp. × 72.
Fig. 8. Dorsal view of the anterior segments of *Sthenelais orientalis* Potts. × 27.
Fig. 9. Compound neuropodial bristle of the same species. × 225.





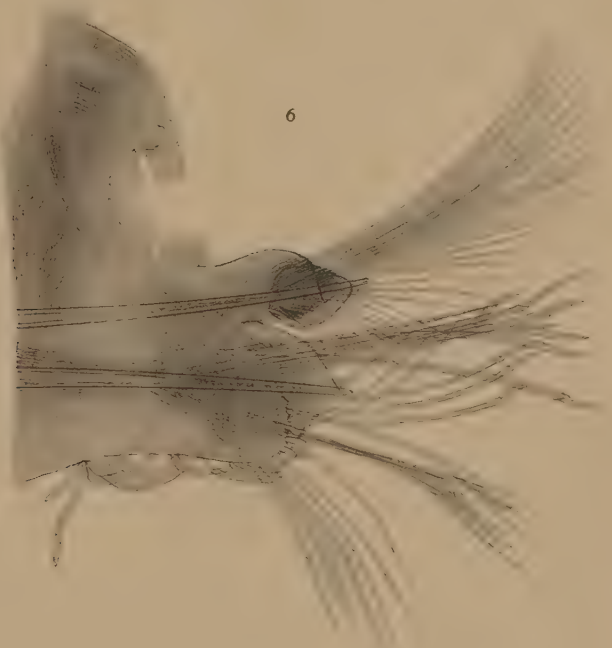


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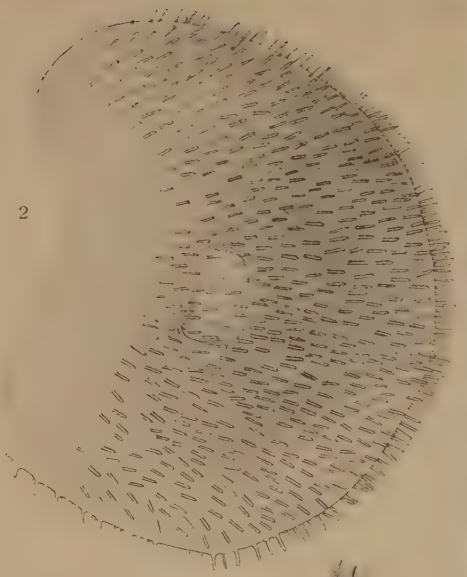
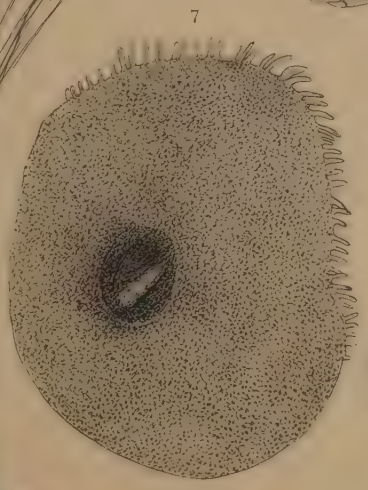
PLATE XXIII.

Fig. 1. Parapodium of *Sthenelais orientalis* Potts. × 45.
Fig. 2. Scale of the same species. × 45.
Fig. 3. Scale of *Sthenelais heterochela* n. sp. × 24.
Fig. 4. Dorsal view of the anterior segments of the same species. × 25.
Fig. 5. Parapodium (40th) of the same species. × 50.
Fig. 6. Compound neuropodial bristle of the same species. × 360.
Fig. 7. Scale of *Sthenelais malayana* n. sp. × 24.
Fig. 8. Parapodium (14th) of the same species. × 28.
Fig. 9. Compound neuropodial bristle of the same species. × 250.





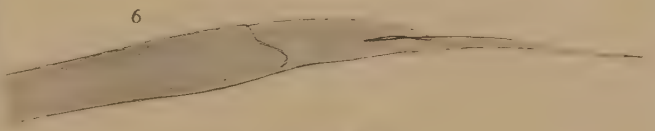


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PLATE XXIV.

Fig. 1. First parapodium of *Leanira sibogae* n. sp.; *l.a.* lateral antenna, *d.t.c.* dorsal tentacular cirrus. × 68.
Fig. 2. Parapodium (50th) of the same species. × 68.
Fig. 3. Dorsal view of the anterior segments of the same species. × 27.
Fig. 4. Dorsal view of the anterior segments of *Leanira tentaculata* n. sp. × 18.
Fig. 5. Parapodium (22nd) of the same species. × 49.

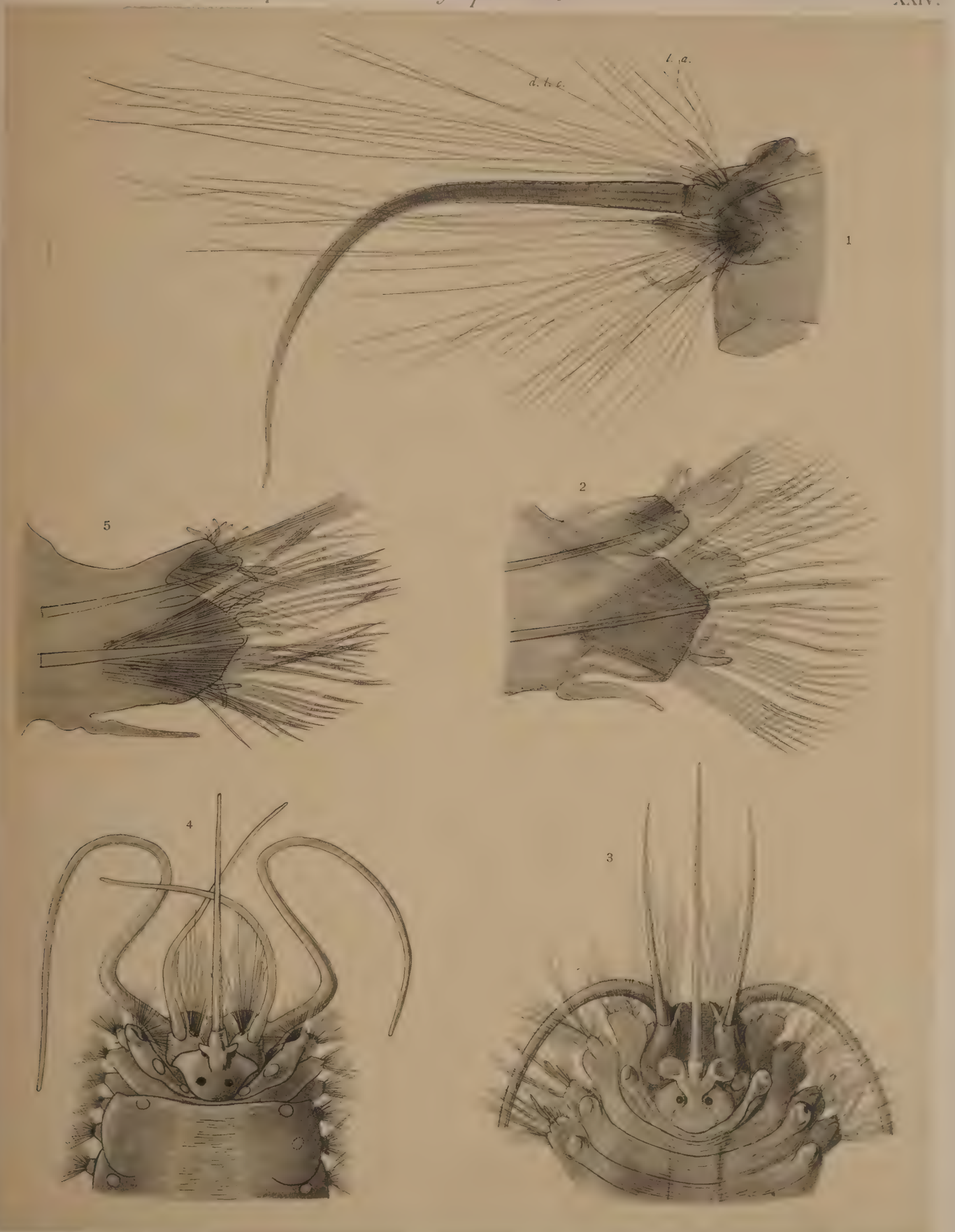

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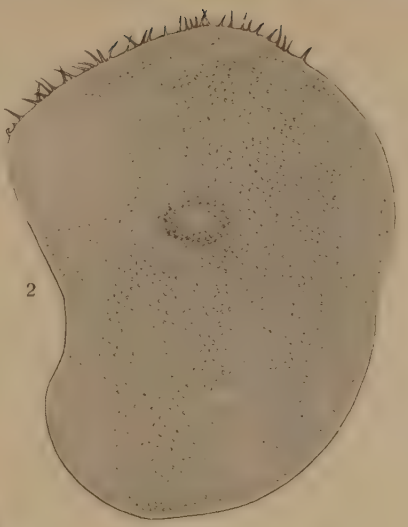
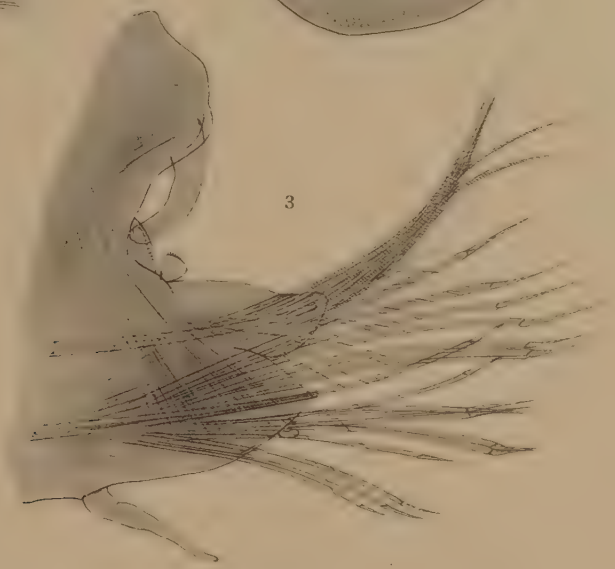
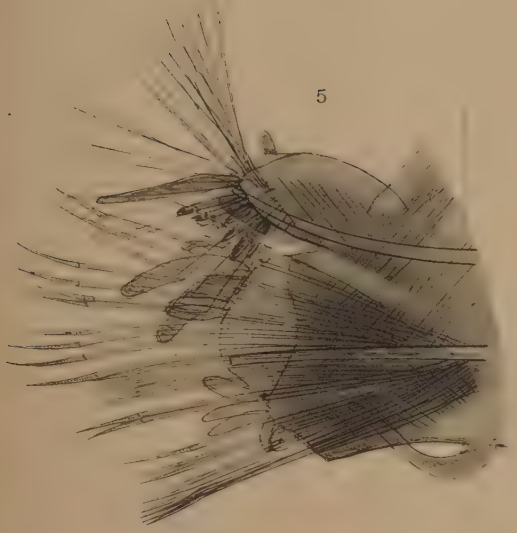
PLATE XXV.

Fig. 1. Dorsal view of the anterior segments of *Leanira javanica* n. sp. × 20.
Fig. 2. Scale of the same species. × 29.
Fig. 3. Parapodium (19th) of the same species. × 50.
Fig. 4. Dorsal neuropodial bristle of the same species. × 360.
Fig. 5. 10th parapodium of *Leanira vulturis* n. sp. × 65.
Fig. 6. 30th parapodium of the same species. × 65.
Fig. 7. Dorsal view of the anterior segments of the same species. × 23.







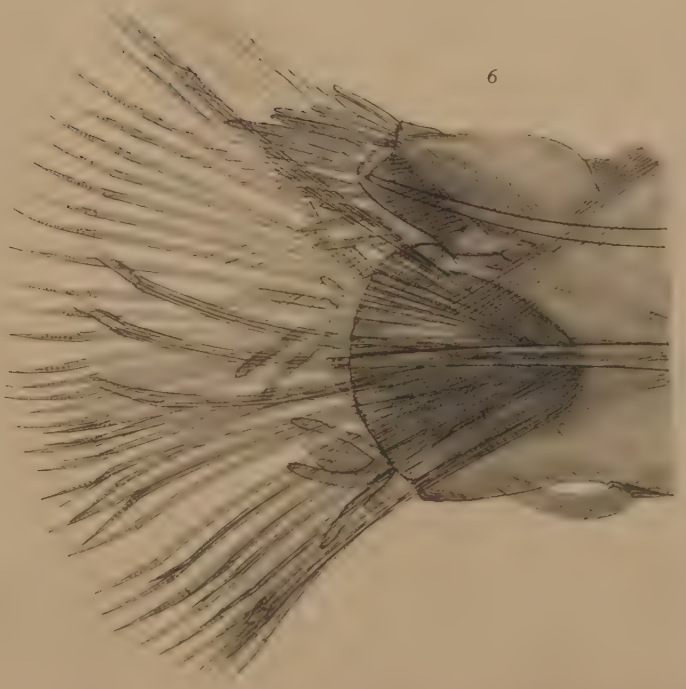


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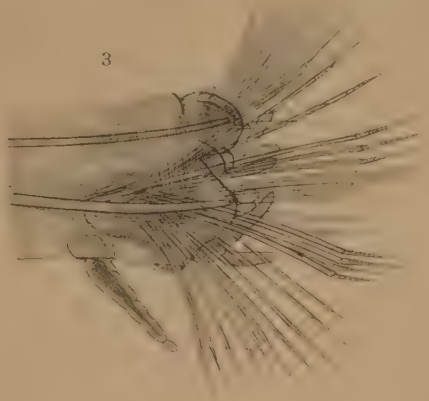
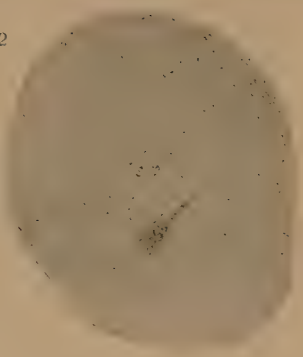
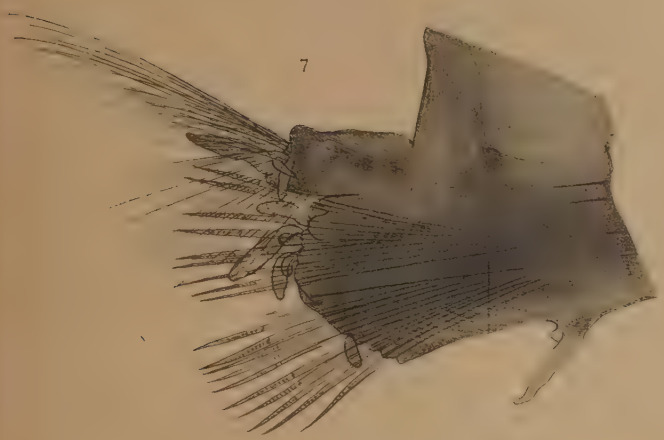
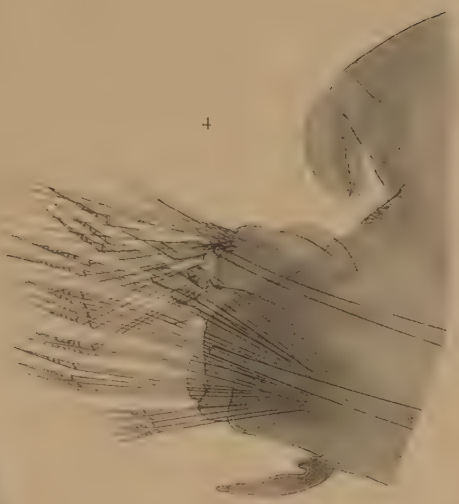
PLATE XXVI.

Fig. 1. Dorsal view of the anterior segments of *Leanira melanocephala* n. sp. × 23.
Fig. 2. Scale of the same species. × 32.
Fig. 3. 3rd parapodium of the same species. × 65.
Fig. 4. 9th parapodium of the same species. × 65.
Fig. 5. Dorsal view of the anterior segments of *Leanira coeca* n. sp. × 18.
Fig. 6. 2nd parapodium of the same species. × 50.
Fig. 7. 12th parapodium of the same species. × 50.
Fig. 8. 22nd parapodium of *Leanira* sp. (Stat. 33). × 90.









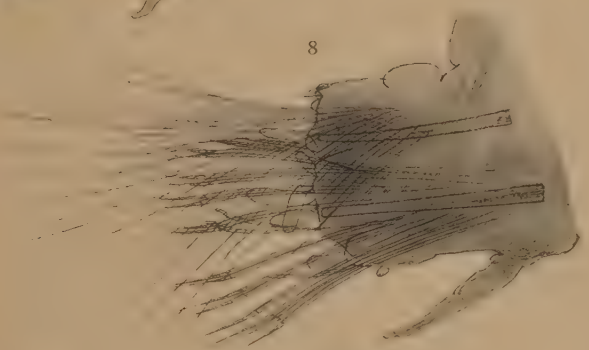


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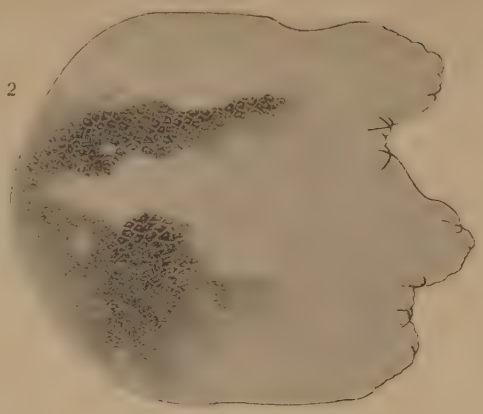
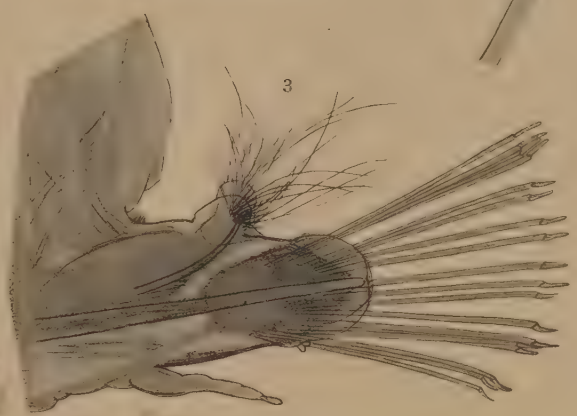
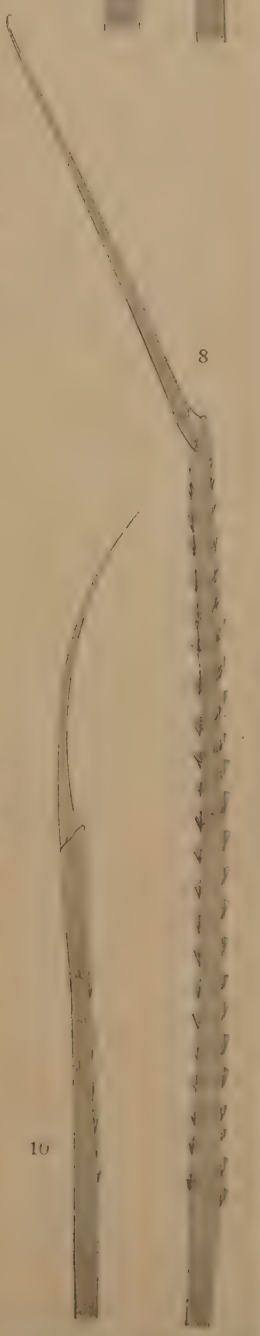
PLATE XXVII.

Fig. 1. Dorsal view of the anterior segments of *Euleanira ehlersi* Horst. × 36.
Fig. 2. Scale of the same species. × 50.
Fig. 3. Parapodium (15th) of the same species. × 72.
Figs 4, *a* and *b*. Median and dorsal neuropodial bristle of the same species. × 360.
Fig. 5. Neuropodial bristle of the third parapodium. × 460.
Fig. 6. Dorsal view of the anterior segments of *Psammolyce zeylanica* Will. × 23.
Fig. 7. First parapodium of the same species; *l.a.*, lateral antenna, *d.t.c.*, dorsal tentacular cirrus. × 45.
Fig. 8. Neuropodial bristle of second parapodium of the same species. × 225.
Fig. 9. Second parapodium of *Psammolyce flava* Kbg. × 45.
Fig. 10. Neuropodial bristle of second parapodium of the same species. × 225.
Fig. 11. Dorsal view of the anterior segments of *Psammolyce malayana* Horst. × $6^1/_2$.
Fig. 12. Ventral neuropodial bristle of the same species. × 225.
Fig. 13. Dorsal neuropodial bristle of the same species. × 225.







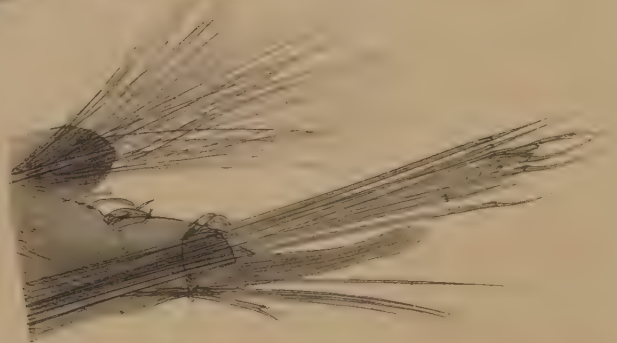


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PLATE XXVIII.

Fig. 1. Spine-like bristle of *Eupolyodontes amboinensis* Mal. & Deh. × 160.
Fig. 2. Pencil-bristle of the posterior segments of the same species. × 160.
Fig. 3. Pencil-bristle of the anterior segments of the same species. × 160.
Figs. 4 and 5. Dorsal and ventral view of the anterior segments of *Polyodontes sibogae* n. sp. × 22.
Fig. 6. Fragment of a scale of the same species. × 50.
Fig. 7. Second parapodium of the same species. × 50.
Fig. 8. 20th parapodium of the same species. × 50.
Fig. 9. Pseudo-penicillate bristle of the same species. × 360.
Fig. 10. A spine (seta aristata) of the same species. × 360.

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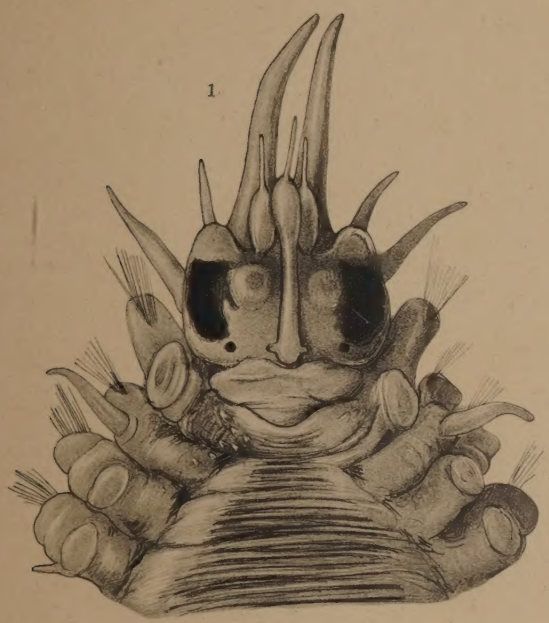
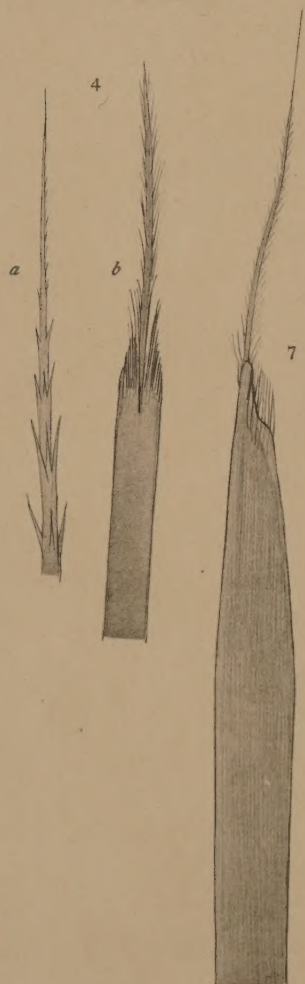
PLATE XXIX.

Fig. 1. Dorsal view of anterior segments of *Eupanthalis nigro-maculata* (Gr.). × 32.
Fig. 2. 10th parapodium of the same species. × 80.
Figs. 3, *a* and *b*. Spine (uncinus) and ventral bristle (seta serrulata) of the same species. × 400.
Figs. 4, *a* and *b*. Dorsal bristles of the same species. × 400.
Fig. 5. Dorsal view of the anterior segments of *Polyodontes atro-marginatus* n. sp. × 12½.
Fig. 6. Scale of the same species. × 21.
Fig. 7. Spine (seta aristata) of the same species.





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